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Intelbras SDC 5850

Series Data Center Switches



Product overview

INTELBRAS SDC 5850 high-density intelligent series switches is developed for data centers and cloud computing networks. It provides powerful hardware forwarding capacity and abundant data center features. It provides up to 32*100G ports and 2 out-of-band management ports (one fiber port and one copper port). The 100G ports are 100G/40G autosensing and each can be split into four interfaces. This enables the switch to provide up to 128*25G or 10G ports. The switch supports modular power supplies and fan trays. By using different fan trays, the switch can provide field-changeable airflows.

The switch is an ideal product for high-density 100GE or 25GE accessing and aggregation at data centers and cloud computing networks. It can also operate as a TOR access switch on an overlay or integrated network.

The switch SDC 5850 series contains the following model:

Product Description	Product Photograph
SDC 5850-2S-32H: The switch provides 32 × 100G QSFP28 ports, 2 × 1G SFP ports, 5 × fan tray slots, 2 × out- of-band management ports, 1 × mini USB console port, and 1 × USB port. The switch uses 650W AC or DC removable power modules and supports 1+1 power module redundancy.	

Features and benefits

High port density and powerful forwarding capacity

- The switch offers high-density 100G/40G/25G/10G ports and a forwarding capacity as high as 6.4Tbps, which enables the switch to provide high-density server access in high-end data centers without oversubscriptions.

IRF2 (Second Generation Intelligent Resilience Architecture)

- Facing the application requirements of the unified switching architecture of the data center, the series switches support the IRF2 technology, which virtualizes multiple devices into one logical.
- The equipment has strong advantages in scalability, reliability, distributed and availability.
- IRF2 not only can achieve a long-distance intelligent elastic architecture within a rack, across racks, and even across regions.

Abundant Data Center Features

The switch supports abundant data center features, including:

- INTELBRAS SDC 5850 series switches supports VXLAN (Virtual Extensible LAN), which provides two major benefits, higher scalability of Layer 2 segmentation and better utilization of available network paths.
- INTELBRAS SDC 5850 series switches supports MP-BGP EVPN (Multiprotocol Border Gateway Protocol Ethernet Virtual Private Network) which can run as VXLAN control plane to simplify VXLAN configuration, eliminate traffic flooding and reduce full mesh requirements between VTEPs via the introduction of BGP RR.
- INTELBRAS SDC 5850 series switches support Priority-based Flow Control (PFC), Enhanced Transmission Selection (ETS) and Data Center Bridging eXchange (DCBX).

INTELBRAS Distributed Resilient Network Interconnection (DRNI)

- INTELBRAS SDC 5850 series switches support DRNI(M-LAG), which enables links of multiple switches to aggregate into one to implement device-level link backup. DRNI is applicable to servers dual-homed to a pair of access devices for node redundancy.
- Streamlined topology: DRNI simplifies the network topology and spanning tree configuration by virtualizing two physical devices into one logical device.
- Independent upgrading: The DR member devices can be upgraded independently one by one to minimize the impact on traffic forwarding.
- High availability: The DR system uses a keepalive link to detect multi-active collision to ensure that only one member device forwards traffic after a DR system splits.

Powerful Visibility

With the rapid development of data center, the scale of the data center expands rapidly; reliability, operation and maintenance become the bottleneck of data center for further expansion. INTELBRAS SDC 5850 series switches conform to the trend of automated data operation and maintenance, and support visualization of data center.

- INT (Inband-Telemetry) is a network monitoring technology used to collect data from the device. Compared with the traditional network monitoring technology featuring one query, one reporting, INT requires only one-time configuration for continuous data reporting, thereby reducing the request processing load of the device. INT can collect timestamp information, device ID, port information, and buffer information in real time. INT can be implemented in IP, EVPN, and VXLAN networks.
- Provides a variety of traffic monitoring and analytic tools, including sFlow, NetStream, SPAN/RSPAN/ERSPAN mirroring, and port mirroring to help customers perform precise traffic analysis and gain visibility into network application traffic. With these tools, customers can collect network traffic data to evaluate network health status, create traffic analysis reports, perform traffic engineering, and optimize resource allocation.
- Supports realtime monitoring of buffer and port queues, allowing for visible and dynamic network optimization.
- Supports PTP (Precision Time Protocol) to achieve highly precise clock synchronization.

RoCE (RDMA over Converged Ethernet)

- Remote Direct Memory Access (RDMA) directly transmits the user application data to the storage space of the servers, and uses the network to fast transmit the data from the local system to the storage of the remote system. RDMA eliminates multiple data copying and context switching operations during the transmission process, and reduces the CPU load.
- RoCE supports RDMA on standard Ethernet infrastructures. INTELBRAS SDC 5850 switch support RoCE and can be used to build a lossless Ethernet network to ensure zero packet loss.
- RoCE include the following key features, include PFC(Priority based Flow Control), ECN(Explicit Congestion Notification), DCBX(Data Center Bridging Capability Exchange Protocol), ETS(Enhanced Transmission Selection).

Flexible programmability

- The switch uses industry-leading programmable switching chips that allow users to define the forwarding logic as needed.
- Users can develop new features that meet the evolving trend of their networks through simple software updates.

Powerful SDN capacity

- INTELBRAS SDC 5850 series switches adopt the next-generation chip with more flexible Openflow FlowTable, more resources and accurate ACL matching, which greatly improves the software-defined network (SDN) capabilities and meet the demand of data center SDN network.
- INTELBRAS SDC 5850 series switches can interconnect with INC - SeerEngine-DC Controller through standard protocols such as OVSDB, Netconf and SNMP to implement network automatic deployment and configuration.

Comprehensive security control policies

- INTELBRAS SDC 5850 series switch supports AAA, RADIUS and user account based authentication, IP, MAC, VLAN, port- based user identification, dynamic and static binding; when working with the INTELBRAS iMC platform, it can conduct real time management, instant diagnosis and crackdown on illicit network behavior.

- INTELBRAS SDC 5850 series switch supports enhanced ACL control logic, which enables an enormous amount of inbound and outbound ACL, and delegate VLAN based ACL. This simplifies user deployment process and avoids ACL resource wastage. SDC 5850 series switch can also take advantage of Unicast Reverse Path Forwarding (Unicast RFP). When the device receives a packet, it will perform the reverse check to verify the source address from which the packets are supposedly originated, and will drop the packet if such path doesn't exist. This can effectively prevent the source address spoofing in the network.

Multiple reliability protection

- The SDC 5850 series switch provides multiple reliability protection at both switch and link levels. With over current, overvoltage, and overheat protection, all models have a redundant pluggable power module, which enables flexible configuration of AC or DC power modules based on actual needs. The entire switch supports fault detection and alarm for power supply and fan, allowing fan speed to change to suit different ambient temperatures.
- The switch supports diverse link redundancy technologies such as INTELBRAS proprietary RRPP, VRRPE, and Smart Link. These technologies ensure quick network convergence even when large amount of traffic of multiple services runs on the network.

Flexible choice of airflow

- To cope with data center cooling aisle design, the INTELBRAS SDC 5850 series switch comes with flexible airflow design, which features bi-cooling aisles in the front and back. Users may also choose the direction of airflow (from front to back or vice versa) by selecting a different fan tray.

Excellent manageability

The switch improves system management through the following ways:

- Provides multiple management interfaces, including the serial console port, mini USB console port, USB port, two out-of-band management ports, and two SFP ports. The SFP ports can be used as in-band management port through which encapsulated sampling packets are sent to the controller or other management devices for deep analysis.
- Supports multiple access methods, including SNMPv1/v2c/v3, Telnet, SSH 2.0, SSL, and FTP.

- Supports standard NETCONF APIs that allow users to configure and manage the switch, enhancing the compatibility with third-party applications.

Hardware Specification

Item	SDC 5850-2S-32H
Dimensions (H × W × D)	43.6 × 440 × 460 mm (1.72 × 17.32 × 18.11 in)
Weight(Full loaded)	≤ 15 kg (33.07 lb)
Serial console port	1
Out-of-band management port	One GE copper port and one GE fiber port
Mini USB console port	1
USB port	1
QSFP28	32
SFP port	2
Expansion slot	-
CPU	2.4GHz @4Cores
Flash/SDRAM	4GB/8GB
Latency (64bytes)	= 1 μs
Switching capacity	6.4 Tbps
Forwarding capacity (64bytes)	2008 Mpps unidirecional 4016 Mpps bidirecional
Buffer	32M
AC-input voltage	90v to 264v
DC-input voltage	−40v to −72v
Power module slot	2
Power supply redundancy	Two power supplies can be connected in parallel to achieve 1+1 redundancy and load sharing between them.
Fan tray slot	5
Air flow direction	From front to rear or from rear to front
Static power consumption	Single AC: 154 W Dual AC: 166 W Single DC: 154 W Dual DC: 163 W
Typical power consumption	Single AC: 198 W Dual AC: 210 W Single DC: 197 W

	Dual DC: 208 W
Maximum heat consumption (BTU/hour)	Single AC: 676
	Dual AC: 717
	Single DC: 672
	Dual DC: 710
MTBF(years)	27.2
MTTR(hour)	1
Operating temperature	0°C to 45°C (32°F to 113°F)
Operating humidity	5% to 95%, noncondensing

Software Specification

Item	Feature description
Device Virtualization	IRF M-LAG(DRNI) S-MLAG
Network Virtualization	BGP-EVPN VxLAN EVPN ES
VxLAN	L2 VxLAN gateway L3 VxLAN gateway Distributed VxLAN gateway Centralized VxLAN gateway EVPN VxLAN manual configured VxLAN IPv4 VxLAN tunnel IPv6 VxLAN tunnel QinQ VxLAN access
SDN	INC - SeerEngine-DC
Lossless network	PFC and ECN DCBX RDMA and ROCE PFC deadlock watchdog ECN overlay ROCE stream analysis
Programmability	Openflow1.3 Netconf Ansible Python//TCL/Restful API to realize DevOps automated operation and maintenance Openflow1.3

Traffic analysis	Sflow Netstream
VLAN	Port-based VLANs Mac-based VLAN ,Subnet-based VLAN and Protocol VLAN VLAN mapping QinQ MVRP(Multiple VLAN Registration Protocol) Super VLAN PVLAN
MAC address	Dynamic learning and aging of mac address entries Dynamic,static and blackhole entries Mac address limiting on ports
IPv4 routing	RIP(Routing Information Protocol) v1/2 OSPF (Open Shortest Path First) v1/v2 ISIS(Intermediate System to Intermediate system) BGP (Border Gateway Protocol) Routing policy VRRP PBR
IPv6 routing	RIPng OSPFv3 IPv6 ISIS BGP4+ Routing policy VRRP PBR
MPLS/VPLS	Support MPLS TE Support RSVP (Up to 500 adjacencies) Support L3 MPLS VPN Support L2 VPN: VLL (Martini, Kompella) Support VPLS, up to 1000 Full-Mesh VPLS peers per instance, up to 128 Support hierarchical VPLS and QinQ+VPLS access PWE3 - Pseudo Wire Emulation, up to 4000 Support P/PE function Support LDP protocol (Up to 500 adjacencies) Support MCE Support MPLS OAM
Multicast	IGMPv1/IGMPv2/IGMPv3 up to 12000 groups IGMP proxying IGMP Snooping IGMP snooping proxying IGMP Filter and IGMP Fast leave MLD snooping IPv4 and IPv6 multicast VLAN IPv4 and IPv6 PIM snooping PIM and IPv6 PIM MSDP Multicast VPN
Reliability	LACP

	STP/RSTP/MSTP protocol, PVST compatible STP Root Guard and BPDU Guard RRPP and ERPS Ethernet OAM Smartlink DLDP BFD for OSPF/OSPFv3, BGP/BGP4, IS-IS/IS-ISv6, PIM/IPM for IPv6 and Static route VRRP and VRRPE LACP STP/RSTP/MSTP protocol, PVST compatible STP Root Guard and BPDU Guard
QOS	Weighted Random Early Detection (WRED) and tail drop Flexible queue scheduling algorithms based on port and queue, including strict priority (SP), Weighted Deficit Round Robin (WDRR), Weighted Fair Queuing (WFQ), SP + WDRR, and SP + WFQ Traffic shaping Packet filtering at L2 (Layer 2) through L4 (Layer 4); flow classification based on source MAC address, destination MAC address, source IP (IPv4/IPv6) address, destination IP (IPv4/IPv6) address, port, protocol, and VLAN to apply qos policy,including mirroring,redirection,priority remark etc. Committed access rate (CAR) Account by packet and byte COPP
Telemetry	gRPC ERSPAN Mirror on drop Telemetry Stream INT iNQA Packet trace, Packet capture
Configuration and maintenance	Console telnet and SSH terminals SNMPv1/v2/v3 Private MIB ZTP System log File upload and download via FTP/TFTP BootRom update and remote update NQA ping,tracert VxLAN ping and VxLAN tracert NTP PTP(1588v2) GIR Graceful Insertion and Removal
Security and management	Micro-Segmentation Hierarchical management and password protection of users Authentication methods,including AAA,RADIUS and HWTACACS Support DDos, ARP attack and ICMP attack function IP-MAC-port binding and IP Source Guard SSH 2.0 HTTPS SSL PKI

	Boot ROM access control (password recovery) RMON Syslog server (up to 20 servers)
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Performance and scalability

Item	Description	
Virtualization	IRF stack	9
	M-LAG device number	2
	ED group	8
ACL	max number of ingress ACLs	18K/pipe, total 2 pipes
	max number of ingress Car	2304/pipe, total 2 pipes
	max number of ingress Counter	10752/pipe, total 2 pipes
	max number of egress ACLs	2048
	max number of egress Car	1K
	max number of egress Counter	1K
Forwarding table	Jumbo frame length(byte)	9416
	Mirroring group	4
	PBR policy	1000
	PBR node	256
	max number of MACs per switch	288K max
	max number of ARP entries IPv4	272K max
	max ND table size for IPv6	136K max
	max number of unicast routes IPv4	324K max
	max number of unicast routes IPv6	262K max
	IPv4 I2 multicast group	4000
	IPv4 I3 multicast group	4000
	IPv4 multicast routing	16K
	IPv6 I2 multicast group	4000
	IPv6 I3 multicast group	4000
	IPv6 multicast routing	8K
	LAGG group	1024
	LAGG member per group	256
	ECMP group	max 4K
	ECMP member per group	2-128

	VRF	4095
Interface	Loopback interface number	1K
	L3 sub interface number	2500
	SVI interface number	4K
	VxLAN AC number	16K
	VxLAN VSI number	16K
	VxLAN tunnel number	2K
	VSI interface number	8K
	IPv4 tunnel number	2K
	IPv6 tunnel number	2K
	VLAN number	4094
Performance	RIB	1M
	MSTP instance	64
	PVST instance	510
	PVST logical port number	2000
	VRRP VRID	255
	VRRP group	256
	NQA group	32
Static table	static mac-address	4000
	static multicast mac-address	1K
	static ARP	1K
	static ND	4K
	static IPv4 routing table	2K
	static IPv6 routing table	4000

Compliance with Standards and Protocols

Organização	Padrões e Protocolos
IEEE	802.1x Port based network access control protocol
	802.1ab Link Layer Discovery Protocol
	802.1ad - Provider Bridges
	802.1ak MVRP and MRP
	802.1ax Link Aggregation
	802.1d Media Access Control Bridges

Organização	Padrões e Protocolos
	802.1p Priority
	802.1q VLANs
	802.1s Multiple Spanning Trees
	802.1ag Connectivity Fault Management
	802.1v VLAN classification by Protocol and Port
	802.1w Rapid Reconfiguration of Spanning Tree
	802.3ad Link Aggregation Control Protocol
	802.3ah Ethernet in the First Mile
	802.3x Full Duplex and flow control
	802.3az Energy Efficient Ethernet
	802.3ba 40/100G Ethernet
IETF	RFC 1112 Host Extensions for IP Multicasting (Internet Group Management Protocol IGMPv1)
	RFC 1213 MIB-2 Stands for Management Information Base
	RFC 1305 Network Time Protocol (Version 3)
	RFC 1493 Bridge MIB
	RFC 1901 Introduction to Community-based SNMPv2
	RFC 1902 Structure of Management Information for Version 2 of the Simple Network Management Protocol (SNMPv2)
	RFC 1905 Protocol Operations for Version 2 of the Simple Network Management Protocol (SNMPv2)
	RFC 2131 Dynamic Host Configuration Protocol
	RFC 2236 IGMPv2
	RFC 2374 An IPv6 Aggregatable Global Unicast Address Format
	RFC 2474 Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers

Organização	Padrões e Protocolos
	RFC 2570 Introduction to Version 3 of the Internet-standard Network Management Framework
	RFC 2576 Coexistence between SNMP V1, V2, V3
	RFC 2578 Structure of Management Information Version 2 (SMIv2)
	RFC 2597 Assured Forwarding PHB Group
	RFC 2711 IPv6 Router Alert Option
	RFC 2787 Definitions of Managed Objects for the Virtual Router Redundancy Protocol
	RFC 2819 Remote Network Monitoring Management Information Base
	RFC 2893 Transition Mechanisms for IPv6 Hosts and Routers
	RFC 2918 Route Refresh Capability for BGP-4
	RFC 2925 Definitions of Managed Objects for Remote Ping, Traceroute, and Lookup Operations
	RFC 2934 Protocol Independent Multicast MIB for IPv4
	RFC 3019 MLDv1 MIB
	RFC 3046 DHCP Relay Agent Information Option
	RFC 3056 Connection of IPv6 Domains via IPv4 Clouds
	RFC 3065 Autonomous System Confederation for BGP
	RFC 3101 OSPF Not-so-stubby-area option
	RFC 3137 OSPF Stub Router Advertisement
	RFC 3176 InMon Corporation's sFlow: A Method for Monitoring Traffic in Switched and Routed Networks
	RFC 3376 IGMPv3
	RFC 3416 SNMP Protocol Operations v2
	RFC 3417 SNMP Transport Mappings
	RFC 3418 Management Information Base (MIB) for the Simple Network Management Protocol (SNMP)

Organização	Padrões e Protocolos
	RFC 3484 Default Address Selection for IPv6
	RFC 3509 Alternative Implementations of OSPF Area Border Routers
	RFC 3580 IEEE 802.1X Remote Authentication Dial In User Service (RADIUS) Usage Guidelines
	RFC 3587 IPv6 Global Unicast Address Format
	RFC 3623 Graceful OSPF Restart
	RFC 3768 Virtual Router Redundancy Protocol (VRRP)
	RFC 3810 Multicast Listener Discovery Version 2 (MLDv2) for IPv6
	RFC 3973 PIM Dense Mode
	RFC 4022 MIB for TCP
	RFC 4113 MIB for UDP
	RFC 4213 Basic Transition Mechanisms for IPv6 Hosts and Routers
	RFC 4251 The Secure Shell (SSH) Protocol
	RFC 4252 SSHv6 Authentication
	RFC 4253 SSHv6 Transport Layer
	RFC 4254 SSHv6 Connection
	RFC 4271 A Border Gateway Protocol 4 (BGP-4)
	RFC 4273 Definitions of Managed Objects for BGP-4
	RFC 4291 IP Version 6 Addressing Architecture
	RFC 4292 IP Forwarding Table MIB
	RFC 4293 Management Information Base for the Internet Protocol (IP)
	RFC 4360 BGP Extended Communities Attribute
	RFC 4419 Key Exchange for SSH

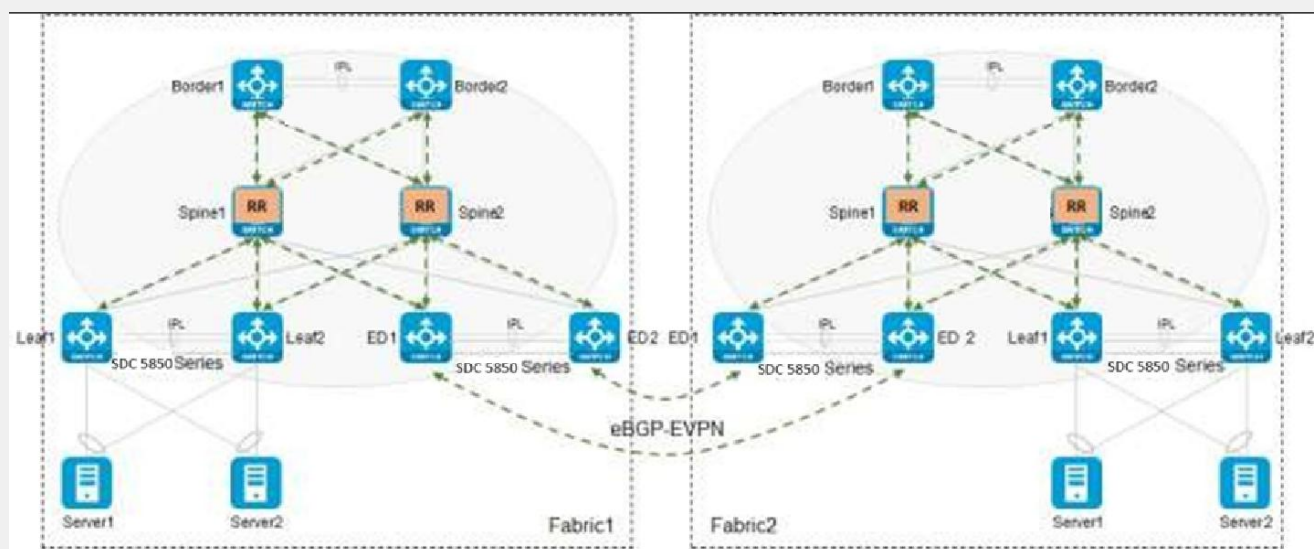
Organização	Padrões e Protocolos
	RFC 4443 ICMPv6
	RFC 4456 BGP Route Reflection: An Alternative to Full Mesh Internal BGP (IBGP)
	RFC 4486 Subcodes for BGP Cease Notification Message
	RFC 4502 Remote Network Monitoring Management Information Base Version 2
	RFC 4541 IGMP & MLD Snooping Switch
	RFC 4552 Authentication/Confidentiality for OSPFv3
	RFC 4601 PIM Sparse Mode
	RFC 4607 Source-Specific Multicast for IP
	RFC 4664 Framework for Layer 2 Virtual Private Networks (L2VPNs)
	RFC 4665 Service Requirements for Layer 2 Provider Provisioned Virtual Private Networks
	RFC 4724 Graceful Restart Mechanism for BGP
	RFC 4750 OSPFv2 MIB partial support no SetMIB
	RFC 4760 (MP-BGP) Multiprotocol Extensions for BGP-4
	RFC 4761 Virtual Private LAN Service (VPLS) Using BGP for Auto-Discovery and Signaling
	RFC 4762 Virtual Private LAN Service (VPLS) Using Label Distribution Protocol (LDP) Signaling
	RFC 4861 IPv6 Neighbor Discovery
	RFC 4862 IPv6 Stateless Address Auto-configuration
	RFC 4940 IANA Considerations for OSPF
	RFC 5059 Bootstrap Router (BSR) Mechanism for PIM, PIM WG
	RFC 5065 Autonomous System Confederation for BGP
	RFC 5095 Deprecation of Type 0 Routing Headers in IPv6
	RFC 5120 M-ISIS: Multi Topology (MT) Routing in Intermediate System to Intermediate Systems (IS-ISs)

Organização	Padrões e Protocolos
	RFC 5176 Dynamic Authorization Extensions to Remote Authentication Dial In User Service (RADIUS)
	RFC 5187 OSPFv3 Graceful Restart
	RFC 5280 Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile
	RFC 5308 Routing IPv6 with IS-IS
	RFC 5340 OSPFv3 for IPv6
	RFC 5381 Experience of Implementing NETCONF over SOAP
	RFC 5424 Syslog Protocol
	RFC 5492 Capabilities Advertisement with BGP-4
	RFC 5519 Multicast Group Membership Discovery MIB (MLDv2 only)
	RFC 5798 VRRP (exclude Accept Mode and sub-sec timer)
	RFC 5880 Bidirectional Forwarding Detection
	RFC 5905 Network Time Protocol Version 4: Protocol and Algorithms Specification (NTPv4)
	RFC 6020 YANG - A Data Modeling Language for the Network Configuration Protocol (NETCONF)
	RFC 6620 FCFS SAVI
	RFC 6987 OSPF Stub Router Advertisement
	RFC 7348 Virtual eXtensible Local Area Network (VXLAN): A Framework for Overlaying Virtualized Layer 2 Networks over Layer 3 Networks
	RFC 7432 BGP MPLS-Based Ethernet VPN
Certificates and standards	Anatel
	RoHS
	European Directives compliance CE
	FCC Part 15 Subpart B CLASS A
	ICES-003 CLASS A VCCI CLASS A CISPR 32 CLASS A

Organização	Padrões e Protocolos
	EN 55032 CLASS A AS/NZS CISPR32 CLASS A CISPR 24 EN 55024 EN 61000-3-2 EN 61000-3-3 ETSI EN 300 386 GB/T 9254 YD/T 993
	UL 60950-1 CAN/CSA C22.2 No 60950-1 IEC 60950-1, EN 60950-1 AS/NZS 60950-1 FDA 21 CFR Subchapter J GB 4943.1

Data Center Application

The typical data center application is an EVPN-VxLAN design, when some switch work as spine or spine/border, SDC 5850 series work as leaf and border or ED. From this design ,the users can get a non-blocking large L2 system.



Order information

PID	Description
SDC 5850-2S-32H	INTELBRAS SDC 5850-2S-32H L3 Ethernet Switch with 32 QSFP28 Ports
LSVM1AC650	650W AC Power Supply Module (From the power module side to the port side)
LSVM1DC650	650W DC Power Supply Module (From the power module side to the port side)
LSWM1FANSAB	Fan Module (From the port side to the power module side)
LSWM1FANSA	Fan Module (From the power module side to the port side)