

# ETS-1-1G

## Ethernet Access Switches



- L2+ switches
- Stacking support
- Multicast support (IGMP Snooping, MVR)
- Advanced security (multilayer ACLs, IP Source Guard, and Dynamic ARP Inspection)

### MARKET SEGMENTS AND APPLICATIONS

New generation access switches provide end users connectivity to large-scale networks, small and medium business networks, and service provider networks, using Gigabit Ethernet interfaces.

The switches support VLANs, multicast groups, and advanced security.

### ETHERNET INTERFACE

Head-of-line blocking (HOL) protection  
 Back pressure  
 Auto MDI/MDIX  
 Jumbo frames  
 Flow control (IEEE 802.3X)  
 Port mirroring

### LAYER 2

#### VLAN

Voice VLAN  
 802.1Q  
 Q-in-Q  
 Selective Q-in-Q  
 GVRP

#### L2 Multicast

Multicast profiles  
 Static Multicast groups  
 IGMP Snooping v1,2,3

Port/host-based IGMP Snooping Fast Leave  
 IGMP proxy-report (for PoE options)  
 IGMP authorization via RADIUS  
 MLD Snooping v1,2  
 IGMP querier  
 MVR

#### MAC Table

Independent learning mode per VLAN  
 MAC Multicast Support  
 Configurable aging time of MAC addresses  
 Static MAC Entries  
 MAC Flapping logging

### ROUTING

Static IP routes  
 Dynamic routing protocols RIPv2, OSPFv2, OSPFv3, BGP (requires license, see Ordering)  
 Address Resolution Protocol (ARP)  
 VRRP  
 PIM SM, PIM DM, IGMP Proxy  
 ECMP Load Balancing  
 IP Unnumbered

### RESILIENCY

#### Link aggregation

Static LAG  
 Dynamic LAG (LACP)  
 LAG Balancing Algorithm



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## Ethernet Access Switches

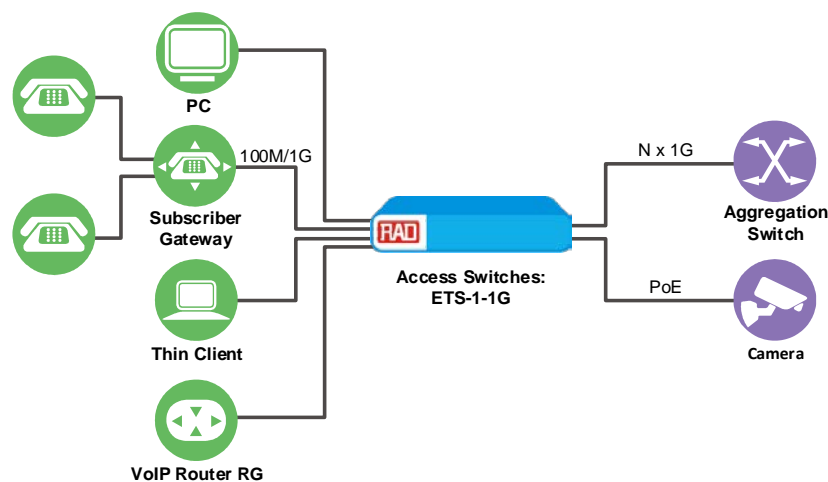
### L2 Protection

STP (Spanning Tree Protocol, IEEE 802.1d)  
 RSTP (Rapid Spanning Tree protocol, IEEE 802.1w)  
 MSTP (Multiple Spanning Tree, IEEE802.1s)  
 STP Multiprocess  
 PVSTP+  
 Spanning Tree Fast Link option  
 STP Root Guard  
 STP Loop Guard  
 BPDU Filtering  
 STP BPDU Guard  
 VLAN-based Loopback Detection (LBD)  
 ERPS (G.8032v2)  
 Private VLAN  
 Layer 2 Protocol Tunneling

### MANAGEMENT

Download and upload of configuration file via TFTP/SFTP  
 Redirecting output of CLI commands to an arbitrary file on ROM  
 SNMPv3  
 Command Line Interface (CLI)  
 Web interface  
 Syslog

SNTP (Simple Network Time Protocol)  
 Traceroute  
 LLDP (802.1ab) + LLDP MED  
 Access control – privilege levels  
 Management interface blocking  
 Local authentication  
 IP addresses filtering for SNMP  
 RADIUS, TACACS+ clients  
 SSH server  
 SSL  
 Macro commands  
 CLI commands logging  
 System log  
 PPPoE Circuit-ID tag  
 Flash File System  
 Debugging commands  
 Rate limit of traffic to CPU  
 Password encryption  
 Password recovery  
 Ping (IPv4/IPv6 support)  
 DNS server and client



*ETS-1-1G Ethernet Access Switches*

### **DHCP**

DHCP snooping  
DHCP clients filtering  
DHCP autoprovision  
DHCP relay (IPv4 support)  
DHCP Relay Option 82

### **IPv6**

IPv6 Host  
Dual-stack

### **SECURITY**

IP Source Guard  
Dynamic ARP Inspection  
sFlow  
MAC-based authentication, Port Security, Static MAC entries  
Port-based authentication IEEE 802.1x  
DoS attack prevention  
Traffic segmentation  
Protection against non-authorized DHCP servers  
BPDU attacks prevention  
NetBIOS/NetBEUI filtering  
PPPoE Intermediate Agent

### **ACL (Access Control Lists)**

L2-L3-L4 ACL  
Time-Based ACL  
IPv6 ACL  
ACL based on:

- Physical port number
- IEEE 802.1p
- VLAN ID
- EtherType
- DSCP
- Protocol type
- TCP/UDP port number
- User Defined Bytes

### **MONITORING AND DIAGNOSTICS**

Statistics on interfaces  
RMON/SMON  
CPU utilization monitoring per task and per traffic type  
Temperature monitoring  
TCAM utilization monitoring  
RAM utilization monitoring  
Virtual Cable Testing (VCT)  
Optical transceiver diagnostics  
Green Ethernet

### **OAM/CFM**

802.3ah Ethernet Link OAM  
Dying Gasp  
802.3ah Unidirectional Link Detection (UDLD)

### QUALITY OF SERVICE (QOS) AND RATE LIMITING

QoS statistics

Shaping, policing

IEEE 802.1p Class of Service (CoS)

Storm Control

Bandwidth management

Scheduling algorithms: Strict Priority/Weighted Round Robin (WRR)

ACL-based traffic classification

Setting the IEEE 802.1p priority for management VLAN

DSCP to CoS/CoS to DSCP remarking

ACL-based VLAN assignment

802.1p, DSCP mark assignment for IGMP

### Technical Features – ETS-1-1G Product Family

Specification	ETS-1-1G/2CMB/8U/AC	ETS-1-1G/2S/2U/8P/AC	ETS-1-1G/2S/2U/8P/DC
Packet Processor	Marvell 98DX3233		
<b>Interfaces</b>			
10/100/1000BASE-T (RJ-45) PoE/PoE+	-		8
10/100/1000BASE-T (RJ-45)	8		2
1000BASE-X (SFP)	-		2
10/100/1000BASE-T/1000BASEX/ 100BASE-FX Combo	2		
Console port	RS-232/RJ45		
<b>Performance</b>			
Bandwidth	20 Gbps		24 Gbps
Throughput for 64 bytes	14.7 MPPS		17.7 MPPS
Buffer Memory	12Mb		
RAM (DDR3)	512 MB		
ROM (RAW NAND)	512 MB		
MAC table	16K		
Quality of Service (QoS)	8 egress queues per port		
TCAM	For routing: 1024 For traffic processing: 1024 x 24B		
ARP table*	1K		
Link Aggregation Groups (LAG)	16, up to 8 ports per LAG		
Maximum size of ECMP groups	8		
L2 Multicast groups (IGMP Snooping)	2K		
VLAN table	4K		
Jumbo frame size	10240 bytes		
Stacking	8 devices		

\*For each host in the ARP table, an entry is created in the routing table

### Ordering

#### ETS-1-1G/2CMB/8U/AC

ETS-1 Ethernet switch, 8 x 10/100/1000BASE-T ports, 2 x 10/100/1000BASE-T/1000BASE-X/100BASE-FX Combo, L2+, 220 VAC

#### ETS-1-1G/2S/2U/8P/AC

ETS-1 Ethernet switch, 8 x 10/100/1000BASE-T (PoE/PoE+) ports, 2 x 1000BASE-X ports, 2 x 10/100/1000BASE-T ports, L2+, 220 VAC

#### ETS-1-1G/2S/2U/8P/DC

ETS-1 Ethernet switch, 8 x 10/100/1000BASE-T (PoE/PoE+) ports, 2 x 1000BASE-X ports, 2 ports of 10/100/1000BASE-T, L2+, 48 VDC

#### ETS-1-BGP-LIC

License for using BGP protocol

Power, Physical, and Environmental Specifications – ETS-1-1G Product Family

Specification	ETS-1-1G/2CMB/8U/AC	ETS-1-1G/2S/2U/8P/AC	ETS-1-1G/2S/2U/8P/DC
Maximum power consumption (including PoE)	15W		270W
PoE budget	-		240W
Power supply	110 VAC – 264 VAC, 50 Hz	176 VAC – 264 VAC, 50 Hz	36 VDC – 72 VDC
Operating temperature	-20 to 45°C (-4 to 113°F)	-20 to 50°C (-4 to 122°F)	-20 to 45°C (-4 to 113°F)
Storage temperature		-40 to 70°C (-40 to 158°F)	
Operating humidity		Up to 95% non-condensing	
Cooling		Passive cooling	
Dimensions (W x D x H)	310 x 158 x 44 mm (12.2 x 6.2 x 1.7 in)		430 x 158 x 44 (17 x 6.2 x 1.7 in)
Weight (net, kg)	2.26	3.14	3.14
Weight (gross, kg)	2.4	3.3	3.3

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