

## Overview

HOS, launched by HONDAO, is a switch operating system, which is also an unified software platform used by all HONDAO switches. HOS has experienced through commercial application test over 10 years. Its advanced modular flexible architecture offers good hardware decoupling capability. HONDAO constantly iterates and releases an updated versions every quarter to fix bugs or update features, ensuring better adaptation to an ever-changing network environment.

## keywords

- Accumulating and iterating over a span of 10 years.
- An unified Software Platform.
- Being verified in the extensive commercial network environment.
- The features are modularized, which allows for pruning, and the code can be easily ported for the same reason.

## Features List table

Tips for reading :

EB-Basic license MS- Advanced license ○-support X- nonsupport

Type	Sub Type	Feature	Description	EB	MS	Remark
Ethernet basic features	Ethernet	Interface	Ethernet interface operating modes(full duplex, half duplex, and auto-negotiation)	○	○	
			Ethernet interface operating rates	○	○	
			Jumbo Frame	○	○	
			port-xconnect	○	○	
		Flow-control	Flow-control tx/rx	○	○	

# HOS Platform Features List

Type	Sub Type	Feature	Description	EB	MS	Remark
Ethernet basic features	Ethernet	Storm-control	Port based storm-control	<input type="radio"/>	<input type="radio"/>	
			VLAN based storm-control	<input type="radio"/>	<input type="radio"/>	
		Port-block	Port-block(know/unknown unicast know/unknown multicast/broadcast)	<input type="radio"/>	<input type="radio"/>	
		Port-isolate	L2/L3/All Port-isolate	<input type="radio"/>	<input type="radio"/>	
			Uni-direction isolate	<input type="radio"/>	<input type="radio"/>	
		Tunnel L2 Protocol	CFM/DOT1X/SLOW-PROTO/STP L2 Protocol Tunnel(support Store-and-forward)	<input type="radio"/>	<input type="radio"/>	
		Forward mode	Cut-through	<input type="radio"/>	<input type="radio"/>	
		VLAN Access mode	Access/Trunk	<input type="radio"/>	<input type="radio"/>	
			Default VLAN	<input type="radio"/>	<input type="radio"/>	
		VLAN Classification	VLAN Classification(port based/mac based/IP based/protocol based)	<input type="radio"/>	<input type="radio"/>	
	VLAN	QinQ	Basic QinQ	<input type="radio"/>	<input type="radio"/>	
			Selective QinQ	<input type="radio"/>	<input type="radio"/>	
			VLAN Mapping(1:1 VLAN Translation)	<input type="radio"/>	<input type="radio"/>	
		VLAN Statistics	VLAN Statistics	<input type="radio"/>	<input type="radio"/>	
		Private VLAN	Private VLAN	<input type="radio"/>	<input type="radio"/>	
Voice VLAN		Voice VLAN	<input type="radio"/>	<input type="radio"/>		
Guest VLAN		Guest VLAN	<input type="radio"/>	<input type="radio"/>		
MAC		MAC Address Table	Automatic learning and aging of MAC addresses	<input type="radio"/>	<input type="radio"/>	
	Hardware Learning		<input type="radio"/>	<input type="radio"/>		
	Static and dynamic MAC address entries		<input type="radio"/>	<input type="radio"/>		
	Blackhole MAC		<input type="radio"/>	<input type="radio"/>		
	MAC Flapping detect	MAC Flapping detect	<input type="radio"/>	<input type="radio"/>		
Port Bridge	Port Bridge	<input type="radio"/>	<input type="radio"/>			

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Type	Sub Type	Feature	Description	EB	MS	Remark
Ethernet basic features	LAG	Link aggregation	Static-LAG & LACP	<input type="radio"/>	<input type="radio"/>	
			LAG load balance(SLB)	<input type="radio"/>	<input type="radio"/>	
			LAG load balance(DLB)	<input type="radio"/>	<input type="radio"/>	
			LAG load balance(RR)	<input type="radio"/>	<input type="radio"/>	
			LAG Self-healing	<input type="radio"/>	<input type="radio"/>	
			Link aggregation weighting	<input type="radio"/>	<input type="radio"/>	
Ethernet Ring protection features	xSTP	STP	Spanning-Tree Protocol	<input type="radio"/>	<input type="radio"/>	
		RSTP	Rapid Spanning-Tree Protocol	<input type="radio"/>	<input type="radio"/>	
		MSTP	Multi-instance Spanning-Tree Protocol	<input type="radio"/>	<input type="radio"/>	
		Protocol Spanning-Tree Protection	BPDU Filter/Guard	<input type="radio"/>	<input type="radio"/>	
			Root Guard	<input type="radio"/>	<input type="radio"/>	
	ERPS	ERPS	Loop Guard	<input type="radio"/>	<input type="radio"/>	
			Anti TC-BPDU attack	<input type="radio"/>	<input type="radio"/>	
			Single ERPS ring	<input type="radio"/>	<input type="radio"/>	
			tangent ERPS rings	<input type="radio"/>	<input type="radio"/>	
			intersecting ERPS rings	<input type="radio"/>	<input type="radio"/>	
compatible with RRPP	<input type="radio"/>	<input type="radio"/>				
Loop back Detect	Loop back Detect	Loop back detection	<input type="radio"/>	<input type="radio"/>		
Layer2 Multicast	Layer2 Multicast	IGMP Snooping	IGMPv1/v2/v3 Snooping	<input type="radio"/>	<input type="radio"/>	
			Fast leave	<input type="radio"/>	<input type="radio"/>	
			Static IGMP snooping group	<input type="radio"/>	<input type="radio"/>	
		MVR	MVR(Multicast VLAN Registration)	<input type="radio"/>	<input type="radio"/>	

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Type	Sub Type	Feature	Description	EB	MS	Remark	
IPv4 Forwarding	ARP	ARP	Static and dynamic ARP entries	○	○		
			Aging of ARP entries	○	○		
			Gratuitous ARP	○	○		
		ARP proxy	basic ARP-Proxy	○	○		
			local ARP-Proxy	○	○		
	IPv4 Unicast Routing	IPv4 Static Routes		IPv4 Static Routes	○	○	
				Black hole Routes	○	○	
				co-work with IP SLA	○	○	
				VRF(Virtual Routing and Forwarding)	○	○	
				uRPF check	○	○	
		RIP	RIPv1/v2	○	○		
		OSPFv2	OSPFv2	X	○		
		IS-IS	IS-IS	X	○		
		BGP	IBGP		X	○	
				EBGP	X	○	
		Route policy		Route-map	○	○	
				IPv4 prefix-list	○	○	
		PBR	PBR(Policy-based Routing)	○	○		
		ICMP		ICMP redirect	○	○	
				ICMP unreachable	○	○	
	ECMP		ECMP(SLB)	○	○		
			ECMP(DLB)	○	○		
			ECMP(RR)	○	○		
			ECMP Self-healing	○	○		
	IPv4 Multicast Routing	IGMP		IGMPv1/v2/v3	○	○	
				IGMP-Proxy	○	○	
				IGMP SSM Mapping	○	○	
		PIM		PIM-SM	X	○	
				PIM-DM	X	○	

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Type	Sub Type	Feature	Description	EB	MS	Remark
	IPv6 Basic Protocol	ICMPv6	ICMPv6	X	○	
		NDP	NDP	X	○	
	IPv6 Unicast Routing	IPv6 Static Routes	IPv6 Static Routes	X	○	
		RIPng	RIPng	X	○	
		OSPFv3	OSPFv3	X	○	
		IS-IS	IS-IS	X	○	
		MLD v1/v2	MLD v1/v2	X	○	
IPv6 Forwarding	IPv6 Multicast Routing	MLD v1/v2 Snooping	MLD v1/v2 Snooping	X	○	
		MVR6	MVR6	X	○	
		PIM-SM v6	PIM-SM v6	X	○	
	IPv6 over IPv4 Tunnel	IPv6 over IPv4 Tunnel	IPv6 over IPv4 Tunnel	X	○	
	IP Tunnel	6to4 Tunnel	6to4 Tunnel	X	○	
		ISATAP Tunnel	ISATAP Tunnel	X	○	
		DHCPv6 Relay	DHCPv6 Relay	X	○	
	IPv6 Service	DHCPv6 Snooping	DHCPv6 Snooping	X	○	
		IPv6 Prefix List	IPv6 Prefix-list	X	○	
	BFD	BFD	BFD for Static route	X	○	
			BFD for OSPFv2	X	○	
			BFD for VRRP/Track	X	○	
			BFD for PBR	X	○	
reliability			VRRP	○	○	
Device features	VRRP	VRRP	Track for VRRP	○	○	
			multi-instance	○	○	
			load balance	○	○	
	Smart Link	Smart Link	Multi-Link	○	○	
	MLAG	MLAG	Monitor-link	○	○	
			MLAG basic	○	○	
			MLAG orphan Port	○	○	

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Type	Sub Type	Feature	Description	EB	MS	Remark
Ethernet OAM	EFM	EFM (802.3ah)	Auto detection	X	○	
			Network fault detection	X	○	
			Network fault handle	X	○	
			remote loop back	X	○	
Ethernet OAM	CFM	CFM (802.1ag)	Hardware CCM detect	X	○	
MAC Ping			X	○		
MAC Trace			X	○		
	Y.1731	Y.1731	Latency and Jitter measure	X	○	
PoE features	PoE	System Power management	Power supply on-spot detection	○	○	
			Power supply capability detection	○	○	
		Power Supply Management	Power capability auto configuration (PSE)	○	○	
			Legacy PD detection	○	○	
			PD max power management	○	○	
			PD priority management	○	○	
			Power Supply Task Plan management(Not ready)	○	○	
			PD Mandatory power supply	○	○	
			PSE log	○	○	
			operations management	PSE Chipset temperature inquire	○	○
PSE firmware update	○	○				
QoS features	QoS	Traffic classification	Traffic classification based on COS/DSCP (simple classification)	○	○	
			Traffic classification based on ACL ( complex classification)	○	○	
			Traffic classification based on inner header of the tunnel packets	○	○	

Type	Sub Type	Feature	Description	EB	MS	Remark
QoS features	QoS		Queue scheduling	<input type="radio"/>	<input type="radio"/>	
			Remark the priority fields(COS/DSCP) of the packet based on ACL	<input type="radio"/>	<input type="radio"/>	
		Traffic behaviors	Remark the priority fields(COS/DSCP) of the packet based on Table Map	<input type="radio"/>	<input type="radio"/>	
			Flow redirection	<input type="radio"/>	<input type="radio"/>	
			Flow mirror	<input type="radio"/>	<input type="radio"/>	
		Traffic policing	Traffic policing based on direction(in/out) of Port	<input type="radio"/>	<input type="radio"/>	
			Traffic policing based on direction(in/out) of VLAN	<input type="radio"/>	<input type="radio"/>	
			Traffic policing based on direction(in/out) of flow	<input type="radio"/>	<input type="radio"/>	
			Traffic policing based on direction(in/out) of aggregated flow	<input type="radio"/>	<input type="radio"/>	
		Traffic shaping	Queue based traffic shaping	<input type="radio"/>	<input type="radio"/>	
			Port based traffic shaping	<input type="radio"/>	<input type="radio"/>	
			SP(Strict Priority)scheduling	<input type="radio"/>	<input type="radio"/>	
		Congestion management	WDRR(Weighted Deficit Round Robin)scheduling	<input type="radio"/>	<input type="radio"/>	Not currently supported on SerdesX platform
			SP + WDRR mixed scheduling	<input type="radio"/>	<input type="radio"/>	Not available on SerdesX platform
		Congestion avoidance	TD(Tail Drop)	<input type="radio"/>	<input type="radio"/>	
			WRED(Weighted Random Early Detection)	<input type="radio"/>	<input type="radio"/>	
Traffic statistics	Packet counts and bytes statistics based on traffic classification	<input type="radio"/>	<input type="radio"/>			
	Packet counts and bytes statistics based on the color after traffic policing	<input type="radio"/>	<input type="radio"/>			

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Type	Sub Type	Feature	Description	EB	MS	Remark
			Forwarded and discarded packet counts and bytes statistics	○	○	
QoS features	QoS	ECN (Explicit congestion notification)	ECN tags based on Tail Drop	○	○	Not available on SerdesX platform
			ECN tags based on WRED	○	○	
Data Center	VARP	Virtual gateway	VARP(Virtual-ARP)	○	○	
			VARP subnet	○	○	
	Tunnel	VxLAN	Manual configure VxLAN tunnel	○	○	
			VxLAN distributed gateway	○	○	
			VxLAN active-active access	○	○	
			Interconnect across Data Centers based on VxLAN	○	○	
			Edit DSCP in VxLan outer header	○	○	
			BGPEVPN	X	○	
			Support to enable/disable overlay split horizon per-VNI	○	○	
			GRE Tunnel	GRE Tunnel	○	○
	NVGRE Tunnel	NVGRE Tunnel	○	○		
	GENEVE Tunnel	GENEVE Tunnel	○	○		
DCB	DCBX	LLDP support DCBX TLV	○	○		
	PFC	PFC	○	○		
Security and management	System Security	SSH	SSHv1/v2	○	○	
			RSA Key generation	○	○	
		RADIUS	RADIUS	○	○	
		TACAS+	TACAS+	○	○	
		AAA	Authentication	○	○	



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Type	Sub Type	Feature	Description	EB	MS	Remark	
			Authorization	○	○		
			Accounting	○	○		
		Dot1x	Port based dot1x	○	○		
			MAC based dot1x	○	○		
			Guest VLAN	○	○		
		ACL	MAC/IP ACL	○	○		
			Basic Mode ACL	○	○		
			Port-group ACL	○	○		
			VLAN-group ACL	○	○		
			IPv6 ACL	○	○		
			ACL UDF	○	○		
			Time Range	○	○		
		ARP Inspection	ARP Inspection	○	○		
		IP Source Guard	IP Source Guard	○	○		
Security and management	System Security	Port Security	Limitation on MAC address learning on interface	○	○		
			Limitation on MAC address learning on VLAN	○	○		
		Control Plane Policy (COPP)	Black list/wihte list	○	○		
			Rate limit	○	○		
		CPU Traffic Limit	CPU Traffic Limit	○	○		
		Prevent DDOS attack	Prevent DDOS attack (ICMP Flood/Smurf/Fraggle/LAND/SYN Flood)	○	○		
		Login filter	Telnet/SSH ACL filtering	○	○		
			Telnet/SSH IPv6 ACL filtering	○	○		
		MAC Security	MacSec(802.1AE)	○	○		
		Link-Flapping detection	Link-Flapping detection	○	○		
	Network Management	DHCP	DHCP Server	○	○		
				DHCP Relay	○	○	
				DHCP Snooping	○	○	

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Type	Sub Type	Feature	Description	EB	MS	Remark		
		RMON	RMON	○	○			
		sFlow	sFlow v4/v5	○	○			
		DHCP	DHCP Client	○	○			
			DHCP Option82	○	○			
			DHCP Option252	○	○			
		RMON	RMON	○	○			
		sFlow	sFlow v4/v5	○	○			
		IP SLA	IP SLA	○	○			
		IPFIX	IPFIX	○	○			
		EFD	Elephant Flow Detection	○	○			
		NTP	NTP(Network Time Protocol)	○	○			
Configur ation and maintena nce	Terminal Services	PTP ( IEEE 1588 )	TC ( Support P2P/E2E 、 Ethernet/Udp Transport )	○	○			
			BC/OC(Support OneStep/TwoStep 、 Request- response/Peer-delay Ethernet/Udp Transport)	○	○			
			Err-disable	Err-disable detection and recovery	○	○		
			DNS	Static DNS Client	○	○		
			LLDP	LLDP	○	○		
			Command Line Interface	Configurations through CLI (Command Line Interface)	○	○		
			Help information	Banner configuration	○	○		
				Help information in English	○	○		
			Terminal service	Vty Terminal service	○	○		
				Console Terminal service	○	○		
			Management interface	In-band management interface and configuration	○	○		
				Out-band management interface and configuration	○	○		
			Managemen t	SNMP	Network management based on SNMPv1/v2c/v3	○	○	

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Type	Sub Type	Feature	Description	EB	MS	Remark
Configuration and maintenance	SNMP		Public and private MIB	<input type="radio"/>	<input type="radio"/>	
			Public and private Trap	<input type="radio"/>	<input type="radio"/>	
	WEB		Configuration and management based on WEB UI	<input type="radio"/>	<input type="radio"/>	
		RPC-API	Configuration and management based on RPC-API	<input type="radio"/>	<input type="radio"/>	
		Smart Config	Smart Config(Automatically configuration when system start)	<input type="radio"/>	<input type="radio"/>	
	Configuration Management	system profile configuration	change the system specifications by choose different STM Profiles	<input type="radio"/>	<input type="radio"/>	
		Restore factory default configuration	Restore factory default configuration	<input type="radio"/>	<input type="radio"/>	
	File System	File system	File system(support directory and file management)	<input type="radio"/>	<input type="radio"/>	
		Upload and download	Upload and download files through FTP or TFTP	<input type="radio"/>	<input type="radio"/>	
			Upload and download files through Xmodem	<input type="radio"/>	<input type="radio"/>	
Debugging And Maintenance	Debug	per-module Debug features	<input type="radio"/>	<input type="radio"/>		
		ICMP Debug	<input type="radio"/>	<input type="radio"/>		
	BHM	Software process monitor: BHM(Beat Heart Monitor)	<input type="radio"/>	<input type="radio"/>		
		Hardware Watch Dog	<input type="radio"/>	<input type="radio"/>		
	Log & alarm	CPU usage display and alarm	<input type="radio"/>	<input type="radio"/>		
		Memory usage display and alarm	<input type="radio"/>	<input type="radio"/>		
		Device temperature, PSU, FAN, status display and alarm	<input type="radio"/>	<input type="radio"/>		
		User operation logs	<input type="radio"/>	<input type="radio"/>		
	Management of logs, alarms, and debugging information	<input type="radio"/>	<input type="radio"/>			

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Type	Sub Type	Feature	Description	EB	MS	Remark
		VCT	VCT(Virtual Cable Test)	<input type="radio"/>	<input type="radio"/>	
		system diagnostics	Detailed Diagnostic-information collection	<input type="radio"/>	<input type="radio"/>	
		Reboot	Manual reboot	<input type="radio"/>	<input type="radio"/>	
			Schedule Reboot	<input type="radio"/>	<input type="radio"/>	
			Reboot Information logging	<input type="radio"/>	<input type="radio"/>	
		network diagnostics	Ping	<input type="radio"/>	<input type="radio"/>	
			IPv6 Ping	<input type="radio"/>	<input type="radio"/>	
			Trace route	<input type="radio"/>	<input type="radio"/>	
		mirror	Port mirror	<input type="radio"/>	<input type="radio"/>	
			Flow mirror	<input type="radio"/>	<input type="radio"/>	
			Remote mirror	<input type="radio"/>	<input type="radio"/>	
			Multi-destination mirror(m:n)	<input type="radio"/>	<input type="radio"/>	
			Use CPU as mirror source	<input type="radio"/>	<input type="radio"/>	
			Use CPU as mirror destination and analyze packet	<input type="radio"/>	<input type="radio"/>	
			ERSPAN	<input type="radio"/>	<input type="radio"/>	
Configuration and maintenance	Debugging And Maintenance	CPU statistics	To CPU/From CPU packets statistics	<input type="radio"/>	<input type="radio"/>	
		L2 Ping	layer2 network connectivity detection - L2Ping (MAC Ping/Trace)	<input type="radio"/>	<input type="radio"/>	
		UDLD	UDLD(Unidirectional Link Detection)	<input type="radio"/>	<input type="radio"/>	
		unidirectional	unidirectional forwarding of the fiber	<input type="radio"/>	<input type="radio"/>	
		Loop back	port loop back	<input type="radio"/>	<input type="radio"/>	
			hardware loop back(internal/external)	<input type="radio"/>	<input type="radio"/>	
		System time	Time configuration	<input type="radio"/>	<input type="radio"/>	
			Timezone	<input type="radio"/>	<input type="radio"/>	

## HOS Platform Features List

Type	Sub Type	Feature	Description	EB	MS	Remark
Configuration and maintenance	Software	System software upgrade	Update via TFTP	○	○	
	upgrade	Uboot upgrade	Uboot upgrade	○	○	

### Supported MIB

- RFC 1155 SMI
- RFC 1157 SNMPv1
- RFC 1212, RFC 1213, RFC 1215 MIB-II, Ethernet-Like MIB and TRAPs
- RFC 1493 Bridge MIB
- RFC 1643 Ethernet MIB
- RFC 1657 BGP-4 MIB
- RFC 1724 RIPv2 MIB
- RFC 1850 OSPFv2 MIB
- RFC 1905 RFC 1907 SNMP v2c, SMIv2 and Revised MIB-II
- RFC 2011 SNMPv2 for Internet Protocol using SMIv2
- RFC 2012 SNMPv2 for transmission control protocol using SMIv2
- RFC 2013 SNMPv2 for user datagram protocol using SMIv2
- RFC 2096 IPv4 Forwarding Table MIB
- RFC 2287 System Application Packages MIB
- RFC 2570-2575 SNMPv3, user based security, encryption and authentication
- RFC 2576 Coexistence between SNMP Version 1, Version 2 and and Version 3
- RFC 2578 SNMP Structure of Management Information MIB
- RFC 2579 SNMP Textual Conventions for SMIv2
- RFC 2665 Ethernet-like interface MIB
- RFC 2819 RMON MIB
- RFC 2863 Interface Group MIB
- RFC 2863 Interface MIB
- RFC 3413 SNMP Application MIB
- RFC 3414 User-based Security model for SNMPv3
- RFC 3415 View-based Access Control Model for SNMP
- RFC 4188 STP and Extensions MIB

Supported MIB ( continue )

- RFC 4363 Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering, and VLAN extensions
- Draft - blumenthal - aes - usm - 08
- Draft - reeder - snmpv3 - usm - 3desede -00
- Draft-ietf-idmr-igmp-mib-13

Supported RFC

- RFC 826 ARP
- RFC 854 Telnet client and server
- RFC 894 IP over Ethernet
- RFC 906 TFTP Bootstrap
- RFC 1027 Proxy ARP
- RFC 1058 RIP v1
- RFC 1112 IGMP v1
- RFC 1122 Host Requirements
- RFC 1195 Use of OSI IS-IS for Routing in TCP/IP and Dual Environments (TCP/IP transport only)
- RFC 1492 TACACS+RFC 1519 CIDR
- RFC 1587 OSPF NSSA Option
- RFC 1591 DNS
- RFC 1812 Requirements for IP Version 4 Routers
- RFC 2030 SNTP, Simple Network Time Protocol
- RFC 2068 HTTP server
- RFC 2080 RIPng for IPv6
- RFC 2131 BOOTP/DHCP relay agent and DHCP server
- RFC 2138 RADIUS Authentication
- RFC 2139 RADIUS Accounting
- RFC 2154 OSPF w/Digital Signatures (password, MD-5)
- RFC 2236 IGMP v2
- RFC 2267 Network Ingress Filtering
- RFC 2328 OSPF v2 (edge-mode)

Supported RFC (continue )

- RFC 2338 VRRP
  - RFC 2362 PIM-SM (edge-mode)
  - RFC 2370 OSPF Opaque LSA Option
  - RFC 2453 RIP v2
  - RFC 2460 Internet Protocol, Version 6 (IPv6) Specification
  - RFC 2461 Neighbor Discovery for IP Version 6 (IPv6)
  - RFC 2463 Internet Control Message Protocol (ICMPv6) for the Internet Protocol Version 6 (IPv6) Specification
  - RFC 2464 Transmission of IPv6 Packets over Ethernet Networks
  - RFC 2474 DiffServ Precedence, including 12 queues/port
  - RFC 2475 DiffServ Core and Edge Router Functions
  - RFC 2526 Reserved IPv6 Subnet Anycast Addresses
  - RFC 2597 DiffServ Assured Forwarding (AF)
  - RFC 2598 DiffServ Expedited Forwarding (EF)
  - RFC 2740 OSPF for IPv6
  - RFC 3176 sFlow
  - RFC 3376 IGMP v3
-