

Anagran FR-1000



Applications

The primary function of the FR-1000 is policy-based control for the utilization of network resources (Bandwidth). It can be used to control the bandwidth consumed by aggressive applications like P2P file sharing and minimize its impact on other users. It can also be used to minimize the impact of network congestion or allocate more bandwidth to higher priority applications.

The FR-1000 can be installed as a layer 2 “bump in the wire” or as a layer 3 “routed” network element. In bump in the wire installations it can act as multiple “bumps” in multiple wires or VLANs.

System Description

The Anagran FR-1000 is a 1 Rack Unit (RU) modular traffic management system with 4 slots per unit for Interface Modules (IM's). The following IMs are available:

- IM-1GE-BaseTx 12-port 10/100/1000 Base-TX
- IM-1GE-SFP 12-port 1Gbps SFP
- IM-10GE-XFP 1-port 10Gbps XFP

QoS Features

Per flow rate control – The FR-1000 continuously monitors the rate of all IP flows and can dynamically adjust the rates of all flows based on network policies. Flows can be treated as:

- Available Rate (AR) – for applications that work well over a wide range of network speeds. The FR-1000 will adjust the speed of AR flows to match the configured policies.
- Fixed Rate (GR) – for applications that require a minimum rate to operate correctly and are sensitive to packet loss, e.g. streaming video and VoIP

Class based policies

The FR-1000 groups flows into classes based on:

- Access Control Lists
- Behavioral rules based on packet size, bandwidth, duration
- Host/subscriber and host/subscriber behavior including total host bandwidth, number of active flows

Policies are then applied based on class membership. Policy actions include:

- Fair (equal) bandwidth per flow
- Fair (equal) bandwidth per host/subscriber – flow rates adjusted to utilize all bandwidth in the class
- Capped bandwidth per flow or per host/subscriber
- Proportional weighting of flows or hosts for tiered services, e.g. gold/silver/bronze hosts/subscribers
- Assured rate guarantees that a class of flows of hosts/subscribers will get a minimum bandwidth
- Redirection (policy based routing), DSCP remarking

Classes can be grouped into class hierarchies for more complex policies



Data Sheet

System Limits

80 Gb/s per unit throughput capacity (half duplex)
Wire speed forwarding of all packets
2 Million simultaneous active flows*
30 Thousand simultaneous active subscribers*
8,192 QoS Classes

Management Features

Command Line Interface – Accessible via a serial console connection, Telnet or SSHv2
SNMPv1, v2c, v3 access to MIB, MIB-II, standard routing protocol MIBs, enterprise MIB
Web GUI
Integrated interface to provisioning and subscriber management systems including DHCP Relay, DHCP snooping, RADIUS snooping, RADIUS client/server, SNMP snooping, direct provisioning, and subscriber management database access

Layer 3/Layer 4

IPv4 Static Routes and Policy Based Routing, dynamic routing using RIPv1, RIPv2, OSPF, OSPFv2, or BGP4 routing protocols
Equal Cost Multipath routing and load balancing
500,000 Route prefixes

Layer 2

IEEE 803.z Gigabit Ethernet Support
IEEE 802.3x Full-Duplex Operation
IEEE 802.3ae 10 Gb over Fiber
IEEE 802.3ac VLAN Tagging
IEEE 802.1v VLAN Classification by Protocol and Port support
IEEE 802.1p VLAN Priority Tagging
IEEE 802.1q Virtual LANs Stacked VLANs

Dimensions

Height 4.5 cm (1.75”) – 1 rack unit (RU)
Width 44 cm (17.3”)
Depth 60 cm (23.6”) for DC version
74 cm (29.1”) for AC version
Weight 13.61 Kg (30 lbs)
Mounting 19” / 23” rack-mountable

Power

Dual AC or DC power supplies for redundancy
AC Power Voltage 100-240V
AC $\pm 10\%$, auto-ranging
Frequency 47-63Hz
DC Power Voltage 36-72vDC
Power Req 350 Watts maximum
Operating Req 12V ± 100 mV

Environmental

Operating Temp 0°C to 46°C
32° F to 114.8° F
Rel. Humidity 5% to 80%
Altitude 3,000 Meters maximum
9,843 Feet maximum

Compliance

Safety UL/CSA 1950
EN 50950
EMC/RFI FCC 15 Class B
EN 55022 Class B
EN 55082-1
Network FCC Part 68
FCC Part 15

* In service provider applications, these limits will support a substantially larger number of subscribers. The actual number of subscribers supported will vary depending on the degree of oversubscription.