

OVERVIEW

The Anagran FR-1000 is an advanced Internet traffic manager (ITM) that allows service providers of all types to reduce the cost of network capacity while improving throughput and reducing delay for all users. In addition to creating a more efficient, deterministic environment, the FR-1000 can be used to mitigate the bandwidth consumed by aggressive peer-to-peer file sharing applications, thereby minimizing their impact on other users. It can also be used to ensure that “quality sensitive” applications such as over-the-top (OTT) video, on-line gaming, and voice over IP (VOIP) receive sufficient bandwidth to deliver the quality that broadband subscribers expect.

SYSTEM DESCRIPTION

Configurable as a transparent layer two or routed layer three network element, the Anagran FR-1000 is a 1 rack unit (RU) modular system with 4 slots per unit for Interface Modules (IMs).

QOS FEATURES

The FR-1000 continuously monitors the rate of all TCP flows and dynamically adjusts their rates 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.
- Guaranteed Rate (GR) – for applications that require a minimum rate to operate correctly and are sensitive to packet loss, such as OTT video, on-line gaming, and VOIP.

CLASS BASED POLICIES

The FR-1000 groups flows into classes based on:

- Access Control Lists (ACLs).
- 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 hierarchies for more complex policies.

SUMMARY

The Anagran FR-1000 ITM is a critical network element designed to dramatically improve network efficiency, improve the quality for demanding streaming and interactive applications, and fundamentally improve the user’s network experience.





SYSTEM CONFIGURATION

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

SYSTEM LIMITS

80 Gbps per unit throughput capacity (half duplex)
Wire speed forwarding of all packets
3,000,000 simultaneous active flows*
60,000 simultaneous active subscribers*
8,192 QOS classes

MANAGEMENT FEATURES

Command Line Interface (CLI)—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 ± 10%, auto-ranging
Frequency..... 47-63Hz
DC Power Voltage..... 36-72vDC
Power Req 350 Watts maximum
Operating Req..... 12V ± 100mV

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

Specifications subject to change without notice. Contact Anagran (phone: +1 408-701-0880, e-mail: sales@anagran.com, web: www.anagran.com) for more information.

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