



ANAGRAN

Total Bandwidth Management

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Anagran's Network Traffic Controller (NTC)

Anagran provides the world's first *intelligent traffic management* product that enables 100% effective visibility, management and control of any type of traffic (VoIP, video, interactive, bulk) regardless of application (e-mail, CRM, P2P, FTP), protocol (TCP, UDP), or format (encrypted, compressed), at speeds ranging from less than 10Mbps to true full duplex 10Gbps and beyond.

Using advanced flow-based technology that maintains keen insight into the real-time actions of every network flow, Anagran exposes *exactly* what is happening within your network at all times, provides the ability to **classify traffic** by flow type, and allows unique new controls with the ability to specify **rate priorities, rate guarantees, and rate limits** for every class of traffic.

The Problem: More Control is needed today

Everything is moving to IP and we now need the ability to treat different types of traffic differently. Historically, network equipment only provided the ability to route or discard. To meet the demands of providing more control, **Deep Packet Inspection (DPI)** evolved to provide some rate controls for P2P and complex lists of flow types. Similar technology evolved called **WAN Acceleration** to reduce traffic congestion using compression or application modification. However these per packet techniques are slow, complex, and expensive. Anagran's unique technology accomplishes much more at much higher speeds by classifying and examining flows, not packets. This allows the **complete reporting, control and routing** of all traffic without the complexity and cost of packet based DPI, WAN accelerators, or routers. Functionally, it replaces all three with one small, low power **Network Traffic Controller (NTC)**.

What is Different?

- **Flows, not Packets:** Anagran's NTC looks at flows (e.g. voice call, video, file, message, etc.) rather than digging into every packet. This unique approach cuts the processing by an order of magnitude and allows much more powerful controls over the rates, priorities, and analysis of all types of traffic.
- **Dynamic per-flow rate management:** Intelligent Flow Delivery™ (IFD) provides precise control of the rate of every flow.
- **Traffic Integrity:** IFD dynamically governs any traffic mix to ensure required performance for all applications, all the time.

Enabling Total Bandwidth Management

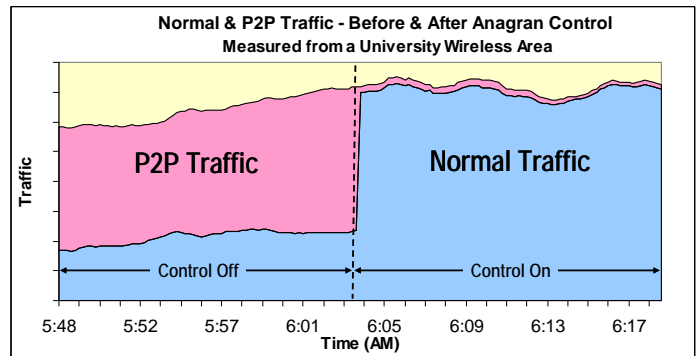
Network overload typically occurs at the WAN/LAN interface or ISP network edge. The majority of the traffic is TCP, and it expands to fill the tightest link it traverses – the edge. This is where Anagran's NTCs are needed. Without a NTC, overload is controlled by delaying and randomly discarding packets. This creates quality problems for voice/video and stalls file transfers. Instead, the NTC keeps all the traffic moving smoothly at any load, without delay, random losses, and stalls.

Key Applications of Anagran Technology

Host Equalization - 100% Effective Without Privacy Invasion – P2P and any other multi-flow traffic causes severe unfairness in any network. Intrusive deep packet inspection (DPI) products detects only 60-70% of P2P, raise privacy concerns, and face serious scalability and cost issues. Watching the flows/user, traffic/user and flow behavior, the Anagran NTC identifies all the multi-flow traffic and can then:

- Equalize the capacity for every user if capacity is limited
- Limit the capacity for all multi-flow users (usually P2P)
- Report with NetFlow complete flow records for any traffic

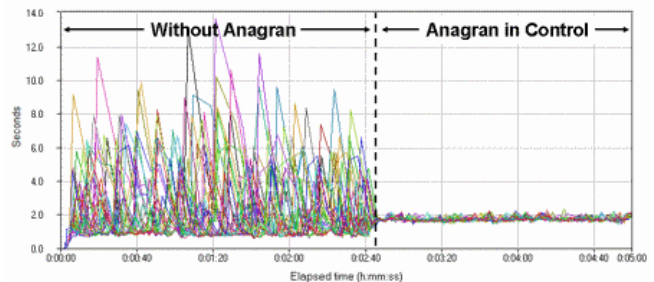
For both schools and ISP's this provides greatly improved response time for normal users as well a limit the potential for copyright infringement. For mobile and WiFi environments, this control can greatly improve both fairness and responsiveness as shown below.



Eliminating Multi-Flow Un-Fairness

Ensure Response Time and Quality for WiFi – WiFi deployments are plagued by poor response time, low quality voice, and stuttering video. Anagran's NTC can manage WiFi traffic in both directions such that the radio capacity is held just below the overload point. This dramatically improves voice, video and response time. As the measurement at a large corporate site below shows, the response time is instantly improves as much as 6:1.

Response Time for a 1 MB File Transfer



Response Time Improvement Sending from a WiFi station

Complete Visibility into All Network Traffic – Anagran is the *first* company to provide an exact, full breakdown of all network traffic flows at any point in time or over any time interval, at wire-rate speeds to 10 Gbps. You can also easily select any specific subset of flows from which to collect flow data records.

Improved Satellite and Radio Throughput by up to 50X – Anagran’s optional enhanced rate signaling for TCP, known as TIA-1039, allows TCP to immediately run at the highest possible speed over satellite and radio links, improving satellite network throughput by up to 50X.

Where Anagran Fits in the Network

The Anagran FR-1000 operates next to an edge or aggregation router, wherever applications contend for network capacity. It may be inserted on either side of a router or firewall, as either a transparent “bump in the wire” or as a Layer 3 node. Operating bi-directionally, another FR-1000 is *not* required “at the other end”.

Ultra-high Performance & Simplicity for IT Managers

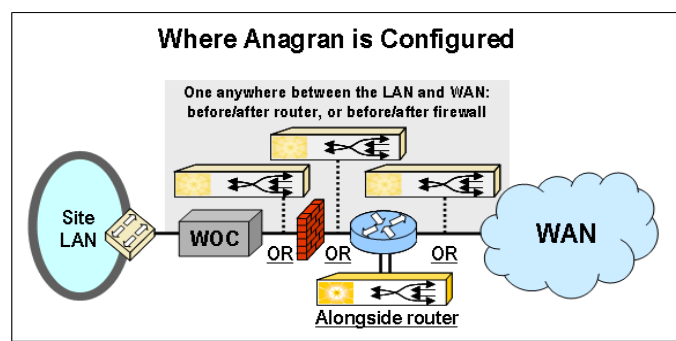
The FR-1000 scales from less than 10Mbps to 48Gbps throughput, and handles up to 4,000,000 concurrent flows and 8,000 classes.



Installed in minutes, the product includes Netflow statistics collection and reporting for *every complete flow*. QoS policies are set once and then automatically maintained, saving valuable operational time.

Summary

Internet founder and Anagran Chairman Dr. Larry Roberts founded Anagran realizing that as network traffic grows and changes, so must the infrastructure. He has created the only products that make the network more intelligent *and* congestion-resilient to finally eliminate the network traffic jam. Anagran delivers **100%** visibility, management, and control of today’s dynamic network traffic mix, for *any* applications, *any* protocols, and *any* formats over *any* network at wire-rate speeds up to 10Gbps.



Common Applications ...

- Network Visibility:
- P2P Management & Control:
- Dynamic Auto-QoS:
- WiFi Network Convergence:
- Video HD & Telepresence:
- Distributed Storage:
- WAN Cost Reduction:

Benefit(s) / Advantages

produces **complete** Netflow records **for every flow** for unsurpassed network insight & audit recognizes and manages *all* P2P traffic *per user* to ensure fair and equitable network usage “set it and forget it” QoS, no more ‘tuning’, automatically adjusts real-time to state of network enable HD Video, VoIP and Data to run **together with perfect quality** over WiFi eliminate separate networks, additional hardware, or bandwidth purchases real-time storage replication / synchronization without impact on other traffic, any time of day recapture up to 50% more WAN capacity by improving utilization to a sustained 90%+

Common Markets ...

- Education & Research:
- Tier 2/3 Service Providers:
- Enterprise:
- Government:
- Finance:
- Legal:
- Healthcare:

Benefit(s) / Advantages

manages P2P, enables high-quality video distance learning and long-distance collaboration enables cost-effective, efficient delivery of quad-play services protects routers and WOCs from overload, eliminates network congestion and bottlenecks resolves general congestion, speeds TCP over satellite by up to 50X reduces transaction latency and increases transaction speeds; protects VoIP enables cost-effective convergence of document retrieval, VoIP, & video enable HD Telemedicine and real-time access to huge files e.g. X-rays