

Why Manage Bandwidth?

This white paper is aimed at providing a high level overview of the principles of and reasons for managing bandwidth. It is not intended to be an exhaustive technical explanation or definition of the Opteq solution but rather a business oriented overview and insight to some of the philosophy and design principles of Opteq iQ and the benefits of these. This document is best read in conjunction with the Opteq iQ module brochures and datasheets.

The simple answer is “convergence!”...

Over the past few years we have seen a massive explosion in the types of traffic and applications that traverse IP networks. There are good sound reasons for this as globally we take full advantage of the technologies at hand in our every day lives – however, as can be expected this does unfortunately have some negative side effects especially on bandwidth consumption capacities and the resultant degradation in performance issues. A good analogy is an urban or city road system. Years ago a simple one-lane road system with side roads entering via a stop sign was fine for the traffic of the day. As types of traffic (cabs, trucks, busses, RVs etc.) and volumes increased, traffic management techniques had to be developed and added or we would not get to our destinations at all in some cities. Multiple lanes with rules (bus lanes, fast lanes etc.) that can vary with time of day or traffic patterns, traffic lights, buffer zones, variable speed limits, slip lanes, circles, lift clubs and so on. Even with all these techniques we still have congestion and problems in most big cities but just imagine what it would be like without them. That is exactly how unmanaged network traffic looks like. Potentially even worse because an unmanaged network has not got the ability to stop and wait for traffic to clear. Unmanaged network traffic at a congested point gets discarded and is either lost or has to be resent. If it is part of a transaction then potentially the entire transaction needs to get resent in order to preserve its integrity and that can easily escalate load at a time when you least need it to and thereby adding to the escalating problem.

A note of interest is that some network traffic (TCP/IP and usually your important data) does have some congestion avoidance technology built in and it can detect congestion and discards. Unfortunately what it does when this happens is back off to (hopefully) allow the congestion to ease. This would be fine if that was all that was running on your network but it most likely is not and there will be some other traffic types which do not detect discards or congestion (UDP for example) and this traffic tends to use up the space freed by backing off. This can lead to backing off again and eventually your connection times out and drops entirely.

There are essentially four main reasons why a corporation or organization should manage bandwidth –

1. Congestion

If all networks were designed such that there was no congestion then there would be little reason for managing bandwidth. Unfortunately this is not feasible or cost effective and all networks have peak usage periods and bottlenecks and are usually (and sensibly) designed to cater for average demand rather than peak demand. Bottlenecks can happen anywhere where traffic meets - at a server or a hub or at the point between the LAN and the WAN. This point is most likely a router, which receives data at 10Mbps or 100Mbps or today even 1Gbps and has to get rid of it at much slower speeds. Opteq's bandwidth iQ specializes in managing the bottleneck between the LAN and WAN however it is also

designed to be helpful across the entire network and can manage traffic to a server or other congestion points as well.

2. Prioritization

It is true to say that not all data is equal in importance. Data can vary in importance for three main reasons or a combination of these reasons -

- It is sensitive to time (Latency) such as voice data or real-time transactions or not so sensitive such as email.
- It is important for business reasons such as customer response or billing data or not important because it is personal or frivolous.
- It is important because of a particular user or group of users. The CEO, for example, is likely to want a better browsing experience than his secretary or the person who processes online payments probably needs a better Internet response than the casual browser.

3. Measurement, Reporting and Accounting

There is an old management adage that says, "What is not measured is not managed". There is nowhere where this is truer than in bandwidth. Bandwidth is usually a very expensive and important company resource and it is becoming more and more part of our lives. In order for a company to be able to correctly manage its asset we first need to measure it. This needs to be done in a way that the measurements can be accessed and reported on in a sensible way. You need to know who did what when, how much the resource usage was and how much it cost. Log files and IP or Mac addresses does not do the trick. The best way for a large organization to manage this asset is to back bill the department, region, branch, cost centre, group or user. Then the responsibility (and cost) goes where it should – to the place that incurs the cost and the only place where effective usage management can take place. Opteq iQ products log all statistics to an SQL database and automatically map network address to user, and group using a variety of auto discovery methods. Reporting and accurate billing is a breeze.

4. ROI

A clear and short return on investment is a compelling reason in today's tough markets. Managing your bandwidth achieves this in the following ways –

- **A reduction in expensive WAN link speed and usage.**
Even if a reduction is not possible then most likely a delay in the next upgrade will be possible which saves real money.
In one case study a large organization was about to double the speed of all of its WAN links to over 50 branches. They agreed to try Opteq's range of products instead and have been running for over a year now without the upgrade and have yet to receive a user complaint about performance.
In another case study an organization was about to upgrade their 768kbs line to the Internet to 1mbs. Opteq iQ products not only stopped this but also proved that a reduction to 512kbs was both possible and sensible. This saved the company many thousands of dollars per year and at the same time user's complaints and support calls dropped to zero.
- **A reduction in support calls.**
"I cannot connect" or "I cannot print" or "Why is it so slow how can I work" type calls to the support department are common and very expensive in terms of wasted time and money.
In a measured case study an Opteq product reduced support calls from over 50 per day to 2 per day and those were user finger problems not speed or performance issues.



- **An increase in user satisfaction and productivity.**

A happy user is a productive user and a user who cannot work effectively online today is not productive and costing you money.

We have many interesting case studies about this. An example at a large mining company was a payments clerk who refused to process any payments after 10 a.m. in the morning because it was too frustrating, took too long, and sometimes did not work at all and disconnected half way through which was dangerous. Without any increase in bandwidth today she will happily process a payment for you at anytime and with a smile. At another company a secretary had to arrive at work at 7 a.m. to process a sales figure report for her boss because it took over one hour at that time of day and could not be run at all during the day. Today she will happily run it anytime and it takes less than 5 minutes, again without any bandwidth increase just Opteq's bandwidth iQ ensuring efficient use of the available bandwidth.

- **Elimination or reduction of abuse.**

Your network is a company asset and unfortunately some staff will use it for non-company or non-essential activities. This is especially true if they know that it is not being managed. Can you imagine what your phone bill would look like if you did not keep track of who was using it and for what?

Even if your company does allow personal email with large attached pictures of the family dog or listening to the radio or downloading music and videos then at least you should ensure that it is not holding up your critical sales figures or a response to a customer. With Opteq iQ this is easily achieved - either stopping it altogether or only allowing it at a certain time of day or only when it will not affect business data.

About Opteq iQ

Opteq International is acknowledged as an emerging leader in the rapidly evolving world of true network management. By designing, developing and manufacturing our own proprietary applications on unique hardware server platforms, we retain total control over the quality, throughput and reliability of our products. The Opteq flagship product, Opteq iQ, is the unique customised vehicle through which we measurably impact the businesses of our customers by fully capitalising on the investment made in their network. The driving idea behind Opteq iQ is to get the most out of our customer's network ...to thrive in today's fast-paced, data-intensive economy where our customers depend on the corporate network to be truly responsive and secure. Opteq iQ is designed as a single solution to facilitate the three converging key deliverables of the network management word – Performance, Security and Management. To facilitate this Opteq iQ has a comprehensive suite of fully integrated application modules such as Bandwidth iQ, Web iQ, Compress iQ, Intrusion iQ, Mail iQ, Firewall iQ and Real Time iQ all residing on one common solution platform Singular iQ. All of the Opteq iQ application modules reside on, and exploit the rich functionality provided by Singular iQ. While each module delivers industry leading functionality and performance in its own right these can be combined to deliver the most comprehensive Network Management solution available today. This modular architecture fundamentally differentiates the Opteq iQ product set from its competitors and underpins Opteq's approach and philosophy towards managing network infrastructure - end-to-end management, customised for each unique installation, from one transparent solution.

