

# CALLIS TRAFFIC CONGESTION MANAGER



## THE INTERNET ACCESS CHALLENGE

Irrespective of the Broadband Service Provider's Access Technology (whether fixed or mobile networks), or kind of Network, the existence of congestion points will have to be handled in an efficient way. Not doing this implies user complaints and poor network performance, creating opportunities for competitors.

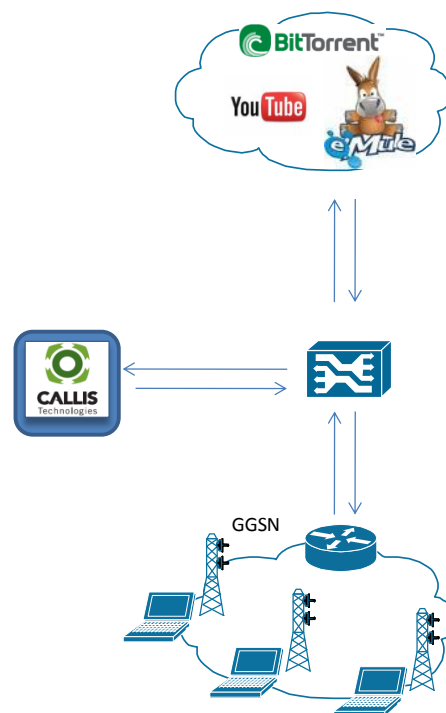
One way to resolve this situation is to increase Network Access resources, for example, by installing new CMTS or more Access Interfaces in a cable network, increasing the amount of B Nodes in mobile access networks, or the amount of sectors in a WIMAX network. But, besides being expensive and slow to implement, these are temporary solutions and, with a growing amount of users and access speeds, they will be easily exceeded. So, even if Access Nodes are added to the Network, they will be shortly congested.

A congested interface behaves in a chaotic manner: packets get discarded without taking into account any business rule. So users with a "Premium" plan could, in fact, experience the same or even worse service than a "Basic" plan user.

## MANAGING CHAOS

Callis Traffic Congestion Manager's (CTCM) objective is to transform this chaotic behavior into a predictable one. This way, the Network Operator can apply business rules during Network congestions. Business rules such as reducing access speed for one or several users, or dropping bandwidth speed for certain applications for one or several users may be enforced.

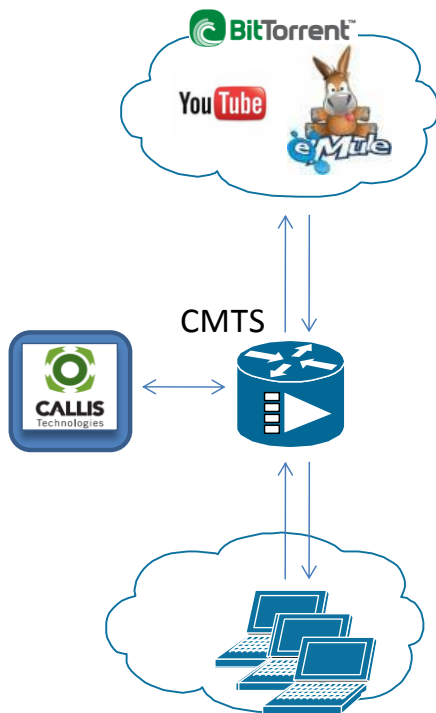
As an example, basic plan users who, during the last hour, have been using the network with a speed greater than 80% of their original plan speed can be reduced their access speed by 10%, while "premium" users aren't affected. If the network still remains congested, speed can be further reduced for these users until congestion disappears. If this is not enough yet, Peer to Peer applications speed could be diminished for "Premium" users, while maintaining their original speed for Web browsing and YouTube videos, keeping a good perception of the delivered service.



These examples show the solution's capacity to dynamically model the network behavior during congestion, giving the Operator the chance to control how services are delivered to their clients.

## CALLIS TRAFFIC CONGESTION MANAGER

The CTCM platform monitors network resources' usage in real-time, detecting congestion points and determining which users are generating the congestion in a specific interface. For example, in a Cablemodem Access Network, when downstream traffic in a CMTS exceeding a certain threshold (set by the Network Operator) is detected, abusive users are punished by temporarily limiting the network resources assigned to them (according to business rules defined by the Service Provider). Once the usage level of such

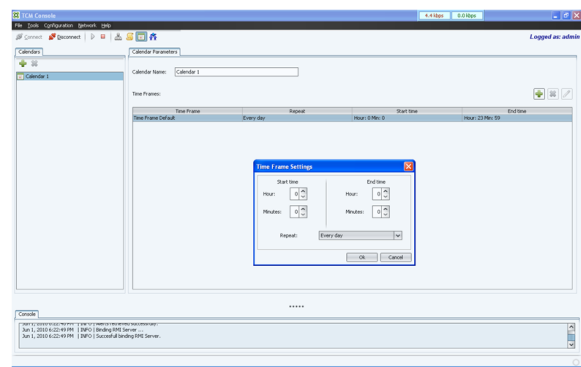


interface is below the threshold, the application decides that congestion is over, and service is re-established at the user's original value. Many algorithms for selecting users and determining congestion are available to be selected by the Network Operator, according to what is best in each situation. Furthermore, calendar rules can be applied to change the way congestion is managed, based on time of day and day of week timeframes.

## "OUT OF THE BOX" FUNCTIONALITY

The CTCM solution supports standard and proprietary interfaces so that its integration to the network can be made in a quick and simple way.

Once installed and configured, the CTCM starts acting immediately. Its actions can extend to the whole Network, or only to "conflictive" nodes, allowing for a controlled deployment of the solution.



## HELPING TAKE DECISIONS

Through statistical information provided by CTCM's report console the Operator may easily verify how traffic is modeled to maintain the interfaces at the predefined traffic levels. Analyzing network usage patterns enables informed decision making as to what resources need to be increased and which can continue providing a high quality service, properly managed by the CTCM.

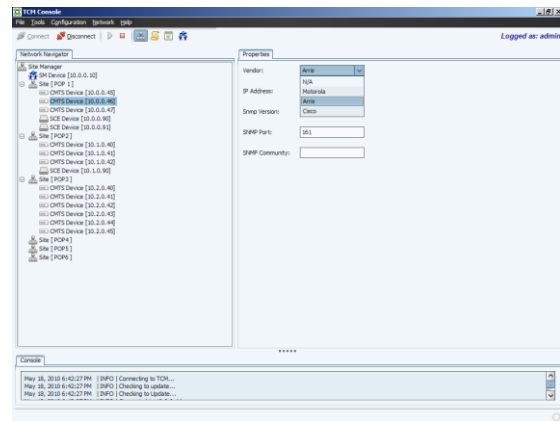
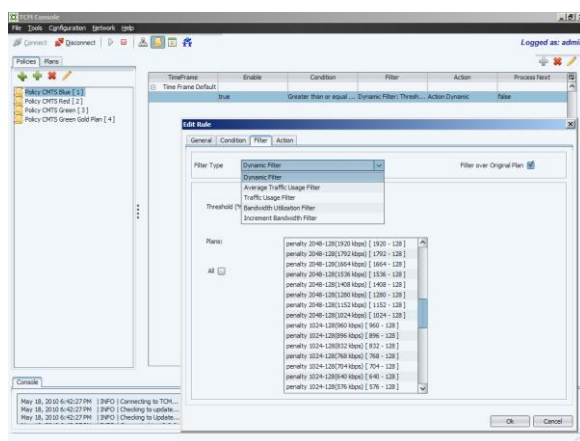
ROI on access equipment is maximized, optimizing CAPEX, OPEX and network growth.

## INTEGRATION WITH CALLIS SERVICE MANAGER

The Callis Service Manager (CSM) is a Broadband Policy Server for fixed and mobile networks, which includes advanced functions such as a Self Service Portal for network users, and a basic Prepaid Server to offer commercial plans in that format. The CSM includes, among other characteristics, the following:

- Web Portal for advanced self service;
- Pre and Postpaid Services (based on time and/or traffic volume, differentiated by application type);
- Creation of Promotional Plans, with the option to deliver the new plan at the end of the trial period;
- Advanced Services, such as Bandwidth on Demand (BoD) – Turbo Button (differentiated by service type);
- Personalized user statistics.

When combined with the Callis Traffic Congestion Manager, the network resource availability and/or policy enforcement is done before the service activation, allowing the customer to have a high quality service experience.



## CISCO SERVICE CONTROL AND CALLIS TRAFFIC CONGESTION MANAGER

Cisco's SCE is a Carrier-Grade network element specially designed to provide real-time Deep Packet Inspection (DPI) advanced services, by monitoring, classifying and applying real-time traffic flow policies, for networks which operate at several GB/s.



When Cisco's SCE platform is used combined with the Callis TCM solution, the capacity to define how policies are enforced during network congestion can be made in an extremely granular way.

This way, Cisco's SCE capacity to precisely model user's behavior during congestion is added to CTCM's native network element handling.

Besides complementing Cisco's SCE (using standard or proprietary based interfaces), the CTCM takes part in its configuration, simplifying the network integration process.



# CALLIS

Technologies

Callis Technologies is a Cisco Developer Partner, with main focus in the development of products that improve Telco and Service Providers profitability, by allowing them to optimize resources and to build innovative business models for the new century. Callis Technologies' solutions are the link between the commercial needs of the service providers and the power of Cisco Systems' products.

With a heritage of more than 30 years as a solutions provider for the networking & telecommunications markets, Callis Technologies is a privately owned company founded in year 2007.

