WIDE AREA NETWORKS STRUCTURAL ANALYSIS (ARIETE ® AND WIDE AREA NETWORK ANALYSIS METHODOLOGY®)

Traditionally there are four ways to minimize telecommunication costs:

- Pressuring the service providers and hardware vendors to reduce monthly expenditures (doing quotations with several service providers and hardware vendors and negotiating hard)
- Tightening the control over the services usage
- Increasing the control over the service providers in order to make sure that the company is paying for the correct services (Ex: checking the telephone bills thoroughly)
- Reducing costs of personnel.

Even when deploying effectively these four cost reduction strategies the potential savings will be always limited by the network design characteristics. Carefully crafting network designs is a fifth alternative (non exclusive) which consists of, using high capacity servers processing scientific applications (based on mathematical models, statistical techniques, algorithms and mass data analysis) to identify the most cost-optimized wide area network (Optimal correlation between the organizations geographical dispersion, its traffic volumes/flows and the tariff system). This analysis shows a complete view of the tradeoffs between cost, performance, and reliability and tends to produce much more effective and lasting savings.

This methodology assumes that networks cannot successfully be approached in a piecemeal fashion because they are holistic entities, hostage to automatic controls that make real time decisions and have the power to cripple an entire company's operations if the designing process does not understand their operation. Thus getting it right is important, however, it isn't enough. To over engineer a network does not require tools or elaborate processes. The true challenge lies in the design of an optimal structure which minimizes cost while maximizing performance. To achieve this objective executing all necessary calculations manually is virtually impossible and that's why **WANOPT** has developed Ariete®.

The magnitude of the savings achievable using our software varies and is directly related to the geographical dispersion of the company's sites. However, through the careful analysis of traffic flows, interconnection costs and tariff rules, it isn't unusual to find over 30% savings in real dollar terms.

The same process used to carefully craft the network design can also assist in several other aspects associated to a wide area network/telecommunication infrastructure. These include activities that

- Evaluate service providers' bids, comparing fairly, different kinds of services, technologies and pricing strategies;
- Evaluate how much would be fair to pay to outsource a network;
- Analyze the current wide area network comparing it with the several interconnections alternatives available throughout the market (benchmarking);
- Validate the deployment of technologies such as VSAT, MPLS, Frame-relay and VPN;
- Evaluate the feasibility of integrating voice and data using different strategies and technologies (ex: Integration total or partial, using VoIP, Voframe or VoATM);
- Negotiate telecommunication budgets establishing a clear correlation between traffic, quality of services and costs;
- Simulate future needs and verify how the network's cost will behave faced with increase in traffic. (Assisting in strategic planning, anticipating needs and problems).
- Analyze traffic and check if the number of trunks, the bandwidth allocation and CIR (committed information rate) definitions are adequate (capacity planning).

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Solution for analyzing wide area networks (Ariete®)

Ariete® is an advanced tool for analyzing wide area networks; designed to help organizations analyze their telecommunications needs. This is achieved through establishing the optimal correlation between the organizations geographical dispersion, its traffic volumes/flows and the tariff system. The tool itself (Ariete®) is the core of a methodology for identifying the ideal WAN structure. The process follows the following three stages:

- Data gathering/files preparation
- Ariete® deployment
- Results refining

Data gathering/Files preparation – phase 1

The first phase consists of identifying and formatting the data necessary to perform the analysis. The required information is grouped into seven categories:

- Applications
- Sources and destinations of traffic
- Interconnections
- Interconnection costs
- Hardware modularity and costs
- Potential clustering nodes.

Ideal structure identification –phase 2

The second phase consists of deploying the tool. Based on the data identified in the previous phase, the tool generates all possible clustering scenarios (topologies), from a totally distributed wide area network to a totally centralized one, and calculates all possible combinations of access, backbone and hardware for each scenario and set aside the more cost effective ones.

Refining the results – phase 3

The third and last phase of the analysis refines the results, allows verification and client specific considerations. In this phase changes are implemented and the models adjusted, setting several scenarios taking into consideration several levels of services (adjusting parameters such as utilization rate, tolerable latency, loss rate etc).
With the resulting optimum structure, outputs produce project details of: topology, equipment, access circuits, backbone circuits, paths, maintenance and management.

Having the target infrastructure makes it possible to compare the results with the actual network. Consequently, it makes it possible to identify what needs to be implemented and/or changed and set the whole project plan, including phases and schedules. Knowing the effort necessary to adjust/implement the network, allows the company to decide how, when or if the project will be implemented.

At this point, it becomes clear which cost factors in the actual structure could be reduced and becomes possible to produce a very straightforward, high-level management report comparing the actual expenditures with the proposed ones. The necessary investments and potential savings can be clearly identified and the return over investment of the project calculated.

In addition, it becomes possible to properly analyze alternatives such as outsourcing or external management. Knowing the cost to build an optimized structure better position an evaluation of cost benefits of various outsourced solutions. Although the identification of an ideal structure to support a given traffic volume is in itself a huge benefit, the ability to calculate these structures quickly allows the organization to perform many calculations using several traffic volumes and establish the correlation between volume and cost.

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The model provides the opportunity for rapid evaluation of multiple traffic volume scenarios, delivering verification of infrastructure cost changes by scenario.

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