Product Overview

NEST IP/MPLS

Network **E**ngineering and **S**imulation **T**ool

QoS Design's NEST IP/MPLS is the best in class for anyone who has to design an optimized IP network with MPLS support.

*Next Generation IP Network and Traffic Engineering Tool – NEST IP/MPLS is an integrated workbench that proposes unique algorithms for **IP Networks Simulation** and **Optimization**.*

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Using NEST IP/MPLS, our network planning process has been reduced from weeks to days and we have developed a richness in analysis and reporting which is now one of our most valuable asset …

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Network operators today are challenged with the need of increased performances and quality triggered by the tremendous development of new IP based applications and services. These improvements shall be planned in quasi real time for more and more complex environments. NEST IP/MPLS addresses the need to streamline this process and to reduce its cost while leveraging key technology differentiators :

- **NEST IP/MPLS improves productivity** by shortening planning cycle and streamlining mission-critical processes, including planning, engineering, performance analysis, budgeting and reporting.
- **NEST IP/MPLS lowers costs** allowing decision makers "to do more with less" while easing and pacing the planning processes.
- **NEST IP/MPLS provides closed-loop project management**, from strategic planning to performance analysis, through an unified architecture.
- **NEST IP/MPLS delivers value fast** with a low cost of total ownership, providing a network planning solution easy to deploy, learn and use.

NEST IP/MPLS plug-ins

NEST IP/MPLS can be enriched with several plug-ins allowing to build a unique workbench tailored to each user needs :

- **NEST Designer** for designing an optimal network topology and to perform capacity planning
- **NEST VPN** for designing VPN L2 and L3 with optimal placement on MPLS resources, with QoS Constraints
- **NEST NGN** for the simulation and optimization of fixed and mobile access (wireless networks GPRS, UMTS, HSDPA & ADSL)
- **NEST Traffic Simulator** for the analysis of traffic logs, the design and simulation of complex multimedia traffic sources

NEST Technology, the Foundation of Outstanding Results.

As all the other NEST modules, IP/MPLS uses an easy to use and deploy unified architecture :

- **NEST is JAVA based** for rapid deployment and anytime/anywhere access and ASP/Portal access.
- **NEST is based on a single centralized database** for total security in multi-users environment and access to virtually any OSS, inventory or IT system.

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NEST incorporates into a practical operational tool some of the worlds most advanced mathematical theory conceived at LAAS-CNRS. NEST is based on a so strong and advanced technology, that we can now model and simulate awfully complex problems with astonishingly accurate results obtained in hours ...

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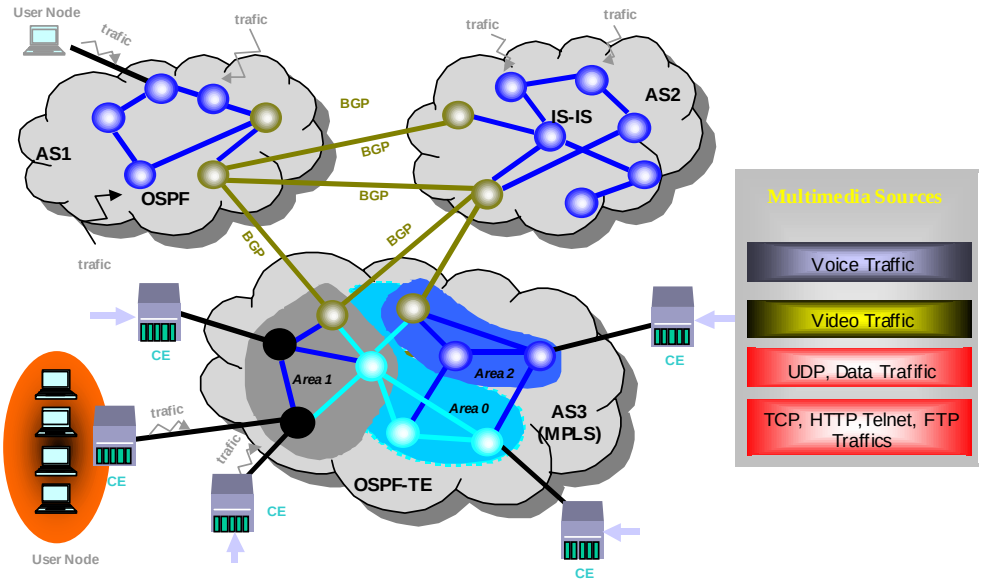
NEST IP/MPLS General Features.

NEST IP/MPLS has been created to offer to IP network planning teams unbalanced design and traffic engineering capabilities to support MPLS :

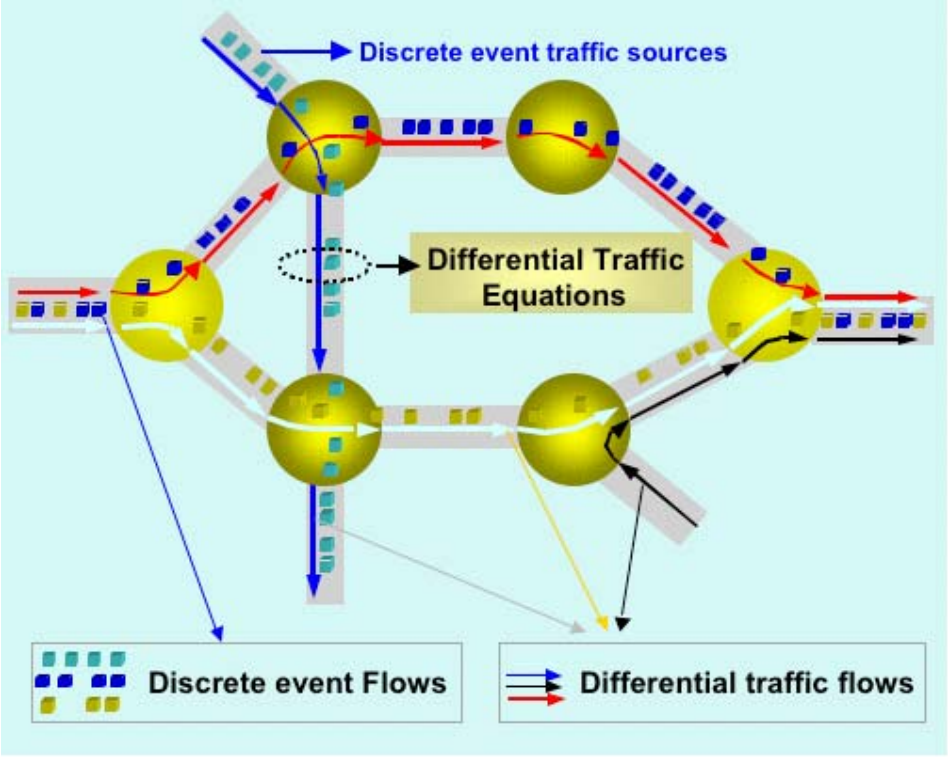
- **NEST IP/MPLS simulates real networks** as shown below :



- **NEST IP/MPLS implements in full the protocols** OSPF, IS-IS, OSPF-TE, EIGRP, BGP, MPLS, MPBGP, HSRP, ...
- **NEST IP/MPLS supports inter-AS policy routing**, IP-MPLS Multicast, VPN L2 and L3, IP and MPLS optimal routing policies.
- **NEST IP/MPLS implements Differentiated Services** : multiple class mapping, Class Based Weighted Fair Queuing (CB-WFQ) and priority queuing for CoS and many more, such as policy mapping.
- **NEST IP/MPLS models in detail Routers & Switches** with extensible models :
  - Input and output queues are user definable
  - Single or multiple queues buffer are user definable
  - All algorithms for DiffServ QoS (shaping, policing, buffer management, scheduling) are adjustable.
- **NEST IP/MPLS supports Multivendor Router Models** such as Cisco, Juniper, Alcatel, Huawei ...

NEST IP/MPLS Unique Simulation Features.

- **NEST IP/MPLS is an Hybrid Simulation Environment** which allows you to choose network element by network element, or flow by flow element, the type of simulation you need : analytic or event driven. Depending of your choices, you can even end up with a full analytic model or a full event driven model.



Hybrid Simulation

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The hybrid simulation feature of NEST is a powerful theoretical breakthrough. This technology enables studies which were impossible to conduct up to now.

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- **NEST IP/MPLS accurately Simulates Traffic Patterns** associated to services, applications, user call behavior :
  - LAN/MAN/WAN Traffic
  - User defined source models
  - Data (Telnet, FTP, SMTP, NNTP, HTTP 1.0 & 1.1 ...)
  - Multimedia applications (VoIP, VIP, ToIP, IPTV, ...)
  - Mobile applications (MMS, Push to talk, WAP, WEB, ...)
  - Server load models

- **NEST IP/MPLS uses a rich Packet Generator Library :**
  - Various audio and video codecs (G711, G726, G729, H261, H263, M-JPEG, MPEG1, MPEG2, MPEG4 ...)
  - Generic random models (Gamma, lognormal, Pareto, Poisson, On-Off, MMPP, M/G/oo, LRD & SRD models...)
  - Models based on traffic logs
  - TCP protocol simulation (Reno, New Reno, Vegas ...)

- **NEST IP/MPLS Traffic Matrix Generator** is a powerful tool to automatically generate traffic flows for each type of application (peer to peer, user to server, Internet) :
  - Day to day, hour to hour, editable user activity
  - Various types of population profiles can be entered ...

NEST IP/MPLS Unique Optimisation Features.

- **IP Routing Optimisation :** NEST IP/MPLS, computes IP routing weights on each interface to optimize a network performance criterion (load balancing, bandwidth utilization, QoS, …).
- **MPLS Traffic Engineering** : TE-Module in NEST IP/MPLS helps you building Engineering Rules for each service, network customers, VPN. It then selects traffic trunks and aggregates them into LSP tunnels.
- **LSPs Optimal Placement** : depending on various parameters such as FECs, CoSs or SLAs, NEST IP/MPLS computes optimized primary paths for the LSPs you have defined. Ingress or Egress nodes can be specified, as well intermediate path segments, priorities, affinities... LSPs are optimized according to nonlinear QoS models for each class of service, bandwidth utilization and various constraints.
- **End to End path Protection** : NEST IP/MPLS computes backup paths for all protected primary paths. QoS constraints and bandwidth utilization are also optimized for backup resources.
- **Fast Reroute** : NEST IP/MPLS automates the optimal design of fast rerouting tables and enables the evaluation of links and nodes protection.
- **Traffic Grooming** : when the traffic grows or changes, the LSPs can become less efficient. NEST IP/MPLS helps you to analyze this phenomena, to rearrange your in use LSPs and to create new ones where needed.
- **Resilience and Bottleneck Analysis** : NEST IP/MPLS allows to measure the impact of a breakdown at the circuit, link, node and site level.
- **Capacity Planning** : NEST IP/MPLS computes which links or nodes can be pruned without jeopardizing the security, the resilience and the performances of the network.
- **Multi-Layer Modeling** : NEST IP/MPLS allows you to model and tune the interactions of the MPLS layer and the IP Layer and takes into account the transmission layer (Shared Risk Link Group …).

NEST IP/MPLS Miscellaneous Features.

- **GUI :** powerful functions help you to easily create or modify network data, equipment, work on large scale networks, view all important parameters (IP & MPLS routing, re-routings, Multicast, link loads, router loads, …)
- **WEB Reports :** all the reports are generated in HTML and can be accessed through web browsers. Users can define their own reports in native SQL or through tools such as Business Object, Crystal Report or EXCEL.
- **Extended Import/Export :** NEST IP/MPLS eases the importation or exportation of data to/from any other system (OSS, measurement, equipments, …).

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