

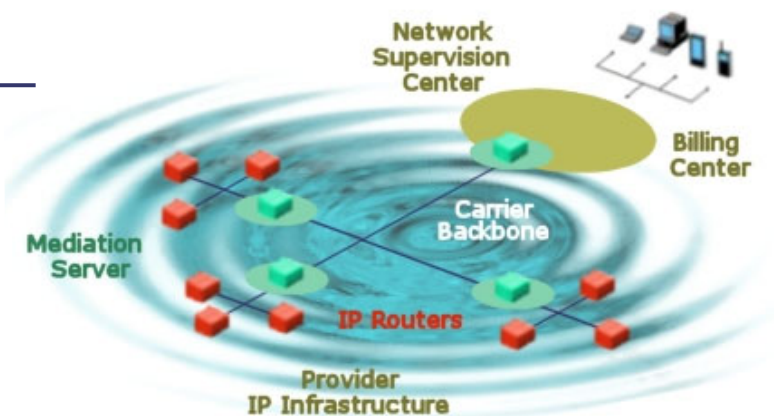
This showcase illustrates the use of the ScalAgent infrastructure to collect network usage data for IP mediation applications directly from geographically distributed Netflow enabled network elements.

Customer Benefits

The collection of network usage data from numerous IP network equipments is a key issue for providing accurate information to the carrier Business Support System or OSS. The collection infrastructure is the cornerstone for both the carrier who develops his own mediation service or for the software vendor who provides a packaged mediation product. The overall objective is to make mediation systems more scalable and more flexible.

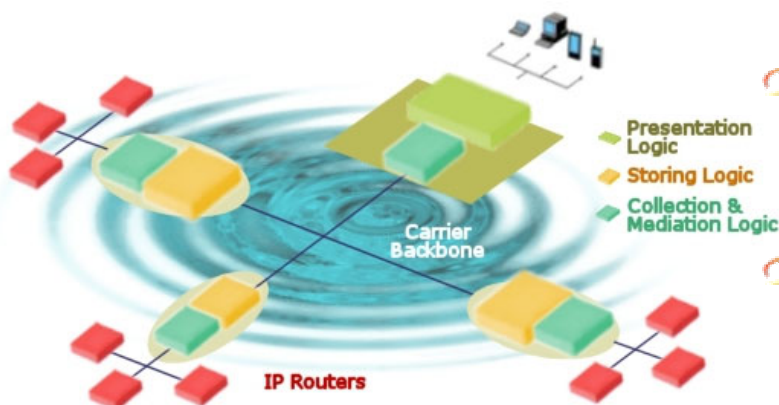
Telcos carriers capture data flow information from the set of IP routers to bill the use of the corresponding IP services to his customers. The SCALAGENT solution answers his requirement for a robust and efficient solution able to support the load generated by the huge amount of data produced by the routers. This is achieved by distributing software agents that collect and process data close to the sources. Only pertinent pre-processed information is transferred to the central mediation and billing service, thus saving computing and networking resources leading to reduced hardware costs for operators. Early data processing also allows new services to be offered to customers, such as real-time follow-up and accounting. Finally, the flexibility of the SCALAGENT solution allows new mediation policies to be deployed rapidly at low cost.

ISVs specialized in mediation, billing or OSS solutions can benefit from the SCALAGENT technology to adapt their existing mediation and billing products to the difficult problem of handling huge



amounts of IP services usage data. The SCALAGENT solution is able to manage NetFlow data flows from Cisco routers and can be easily and quickly adapted to handle new data sources and evolving data formats as necessary. For ISVs, integrating the SCALAGENT distributed data collection building block in their products is a step towards actual convergent mediation solutions needed for the support of emerging 2,5G and future 3G telecom networks. The SCALAGENT solution is non intrusive and thus can be coupled with complementary functions and GUIs into a complete product. This openness is achieved through the use of connectors based on existing standards (XML, JMS, . .).

Solution Architecture



Collection logic is in charge of collecting and processing the NetFlow data flows. It is implemented close to the router to reduce the network bandwidth and the risk of data loss, thus allowing the management of large-scale configurations. It may be deployed at a departmental level in order to maximize the hardware investment for smaller configurations.

Storage logic is in charge of logging usage data for the purpose of fault tolerance. It is implemented close to the router so that data transfers to the central node remain reliable despite transient network failures or loss of data in case of very high traffic periods.



Mediation logic is in charge of filtering, aggregating, transforming, enriching and correlating NetFlow records for various usages. Besides treatments intended for billing, this set of operations can also be used to produce indicators for real-time supervision and control of the networked infrastructure. Reduction factors on rough data can gain up to 5000 according to data sampling and the tuning of the solution. As much mediation operations as possible are settled close to the router for reliability and efficiency purpose, while more complex aggregation and merge operations may remain on a centralized node.



Integration logic is in charge of interfacing the SCALAGENT data collection solution with business applications (e.g. mediation, rating, billing, supervision, etc.). Using recognized standard connectors such as JMS, XML, the solution may be plugged with existing applications of the BSS. Using the documented extension API, new mediation operations may be designed and deployed such as data mapping, data adaptation, external process activation and control, This API is the enabling path to **Active Mediation**.

Technical Components

The SCALAGENT infrastructure behaves as an integration gateway between network elements (i.e. routers) and business applications that exploit usage data — i.e. IP mediation, rating, billing, supervision. Exchanges between routers and the local collection nodes are performed as a continuous stream on a UDP/IP link.

The infrastructure is implemented as a set of distributed agents responsible for the various operations involved: collection, transformation, archive and transfer. Placement of agents is remotely configurable from a central point of administration and the deployment is entirely automated and controlled, thus decreasing the admin workload for large scale configurations.

Pre-processed usage data are passed to business applications through various types of connectors:

- Text file, IPDR, CSV, XML, Excel, ...
- Download into databases: JDBC, Oracle, ...
- via JMS (Java Messaging Service)
- Through gateway agents designed for this specific purpose

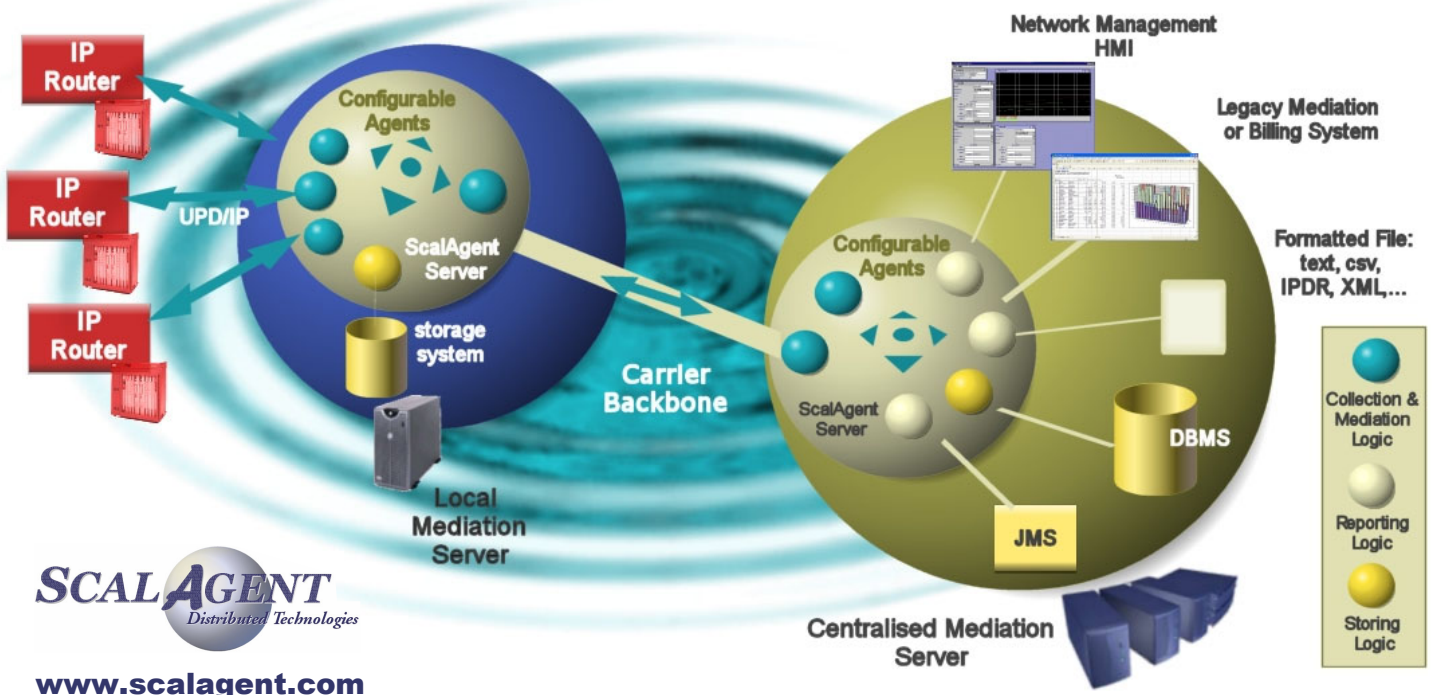
Technical Advantages

The use of the SCALAGENT infrastructure for this showcase has brought the following key advantages:

- Flexibility and adaptability through the automated deployment and reconfiguration of mediation agents
- Fault-tolerance and data integrity despite transient network failures
- Efficiency through the use of distributed computing

Volume of rough data (per second) for each local mediation node	Up to 90 000 NetFlow records
Compression rate (from a router to the billing application)	x500 to x5000 based on traffic type and sampling periodicity
Nb. of routers handled by a local mediation node	1 to 5 according to the traffic

Measures carried out on Athlon 1800+ - 256Mb RAM - MS Win2k



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