SANDVINE

ActiveLogic
Hyperscale data plane for next generation telco networks

While network traffic is increasing at a rapid rate from various internet phenomena (video, gaming, and social sharing), networks are also undergoing technical disruptions from encryption and cloud.
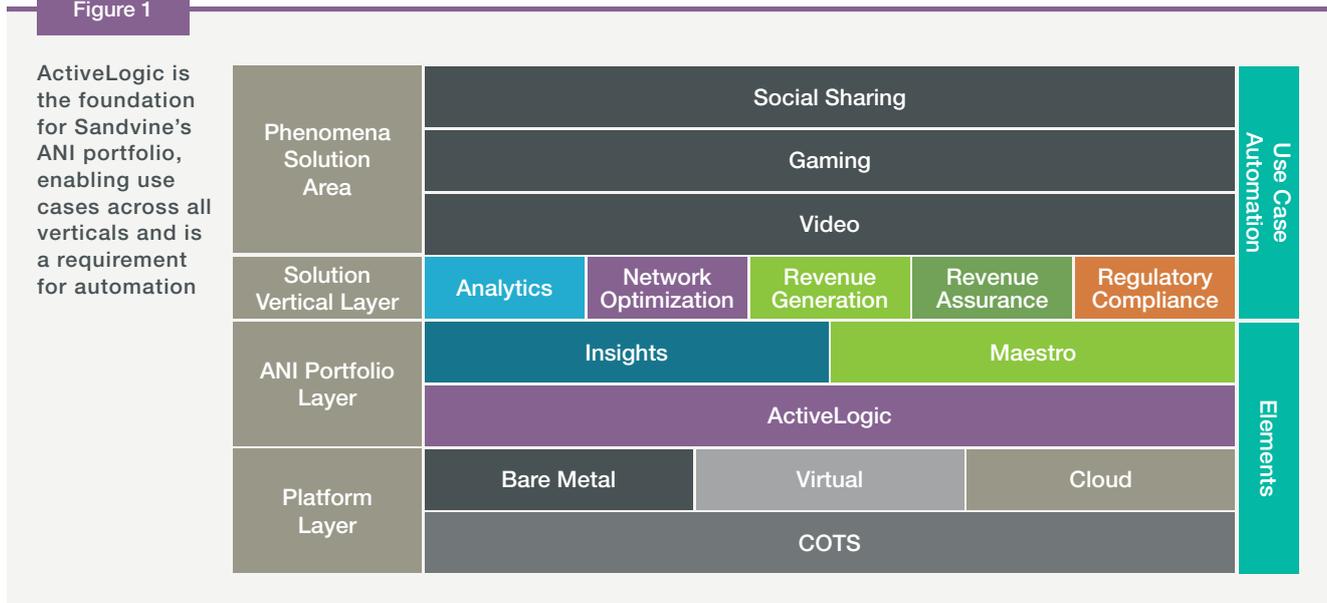
These market and network drivers increase the pressure for network operators to effectively run profitable, efficient, and competitive networks. In order to mitigate these factors, operators need advanced traffic classification techniques, deployment flexibility, hardware independence, and the ability to take advantage of cloud-based infrastructure and the power of automation.

ACTIVELOGIC
ActiveLogic, Sandvine's hyperscale data plane, fulfills these needs and delivers a complete solution suitable for any access and network type, including 5G. Aside from being access agnostic and cloud-ready, ActiveLogic provides operators additional deployment options: virtual as well as COTS-based on Sandvine's iQ42000 platform.

As the final piece of Sandvine's Active Network Intelligence (ANI) Portfolio, ActiveLogic enables operators to complete the transition to an automation-ready network, where they can take advantage of a suite of automation-based use cases.

KEY BENEFITS

- Machine learning-powered ANI Classification Engine, mitigating the effects of encryption and the darkening of the internet

- Uncompromised architectural simplicity for maximum performance at a low TCO with dynamic scaling

- Unlocks a suite of automation-based use cases, which solve some of the toughest network challenges with minimal manual intervention

- Hardware independent software, allowing for flexible, multiple, cost-saving deployment options: COTS, virtual, cloud

Figure 1

ActiveLogic is the foundation for Sandvine's ANI portfolio, enabling use cases across all verticals and is a requirement for automation

Phenomena Solution Area	Social Sharing					Use Case Automation
	Gaming					
	Video					
Solution Vertical Layer	Analytics	Network Optimization	Revenue Generation	Revenue Assurance	Regulatory Compliance	
ANI Portfolio Layer	Insights		Maestro			Elements
	ActiveLogic					
Platform Layer	Bare Metal	Virtual		Cloud		
	COTS					

Machine Learning-Powered Advanced Traffic Classification
ActiveLogic augments Sandvine's existing best-in-class traffic classification capability – application, device, user, location, quality of experience (QoE) – by adding the ANI Classification Engine (ACE). This new engine is powered by machine learning, employing

multiple techniques (Decision tree, Bayesian networks, Gradient Boosting, Neural networks, Clustering, etc.) to mitigate the impact of encryption for general traffic as well as VoIP, video, and VPNs. Sandvine's ANI Classification Engine enables a variety of Sandvine use cases that solve key issues such as fraud detection (VoIP, video, zero-rating), poor QoE, and inaccurate billing.

ActiveLogic is enhancing data with iFeeds, a flexible framework of multi-purpose databases and distributed cloud-based file infrastructure, which delivers automatic updates for maximum accuracy and minimal upkeep.

iFeeds supports the following Sandvine enrichment databases:

- **ContentLogic:** Multi-database categorization of internet websites (URLs) and IP addresses for web intelligence, advertising, and filtering
- **DeviceLogic:** Device detection with a rich set of device attributes for device intelligence and filtering
- **GeoLogic:** Geographic mapping of IP addresses for server location intelligence
- **OTT Feeds:** OTT-provided IP/CDN address via a standardized API to guarantee accuracy across all Sandvine use cases

Using a combination of techniques (i.e., HTTP inspection, traffic correlation, heuristic detection), ActiveLogic can detect IPTV providers and channels, determining fraudulent behavior on the network. (See Video and Television Fraud Management use case.)

Hyperscale Performance
ActiveLogic is built for hyperscale, telco networks, delivering radical simplicity to lower the total cost of ownership (TCO) as networks grow.

ActiveLogic can be deployed in optimal configurations as the architecture enables the data plane layer to proportionally scale from extra small to large configurations. Advanced state sharing between instances and the ability to cluster the instances together enables ActiveLogic's distributed computing architecture to also dynamically scale out/in as performance and function is required delivering carrier-scale performance.

The efficient and highly scalable design of ActiveLogic conforms to 3GPP Control Plane User Plane Separation support to reduce complexity, improve performance, and be 5G deployment-ready.

Telco (private) and public cloud deployments are fully supported with ActiveLogic, including support for OpenStack and Amazon Web Services, ensuring operators can deploy on the infrastructure of their choice for both internal network usage and for enterprise managed services.

Automation
Leveraging analytics-driven automation, ActiveLogic enables a suite of use cases built off Sandvine's industry-leading contextual QoE analytics and inline action. Specifically, operators are able to understand how their users experience the network and then directly drive policy based on the targeted QoE score, achieving a dynamically managed network that doesn't require manual intervention.

By deploying ActiveLogic and use cases, such as Intent-Based Congestion Management, operators can efficiently manage network resources and adjust to the ever-changing demands caused by key applications in video, gaming, and social sharing.

Access and Platform Agnostic
ActiveLogic supports multiple deployment options – bare metal, virtual, cloud – to enable an operator to maintain functionality as they transform to a full cloud deployment from their existing hardware deployment of today, delivering a better TCO. Aside from the flexibility of deployment type, ActiveLogic also allows customers to extend or overlay existing deployments for an easy transition.

Figure 2

ActiveLogic can be deployed in any access network, delivering the same level of intelligence, surgical policy enforcement, and use case value
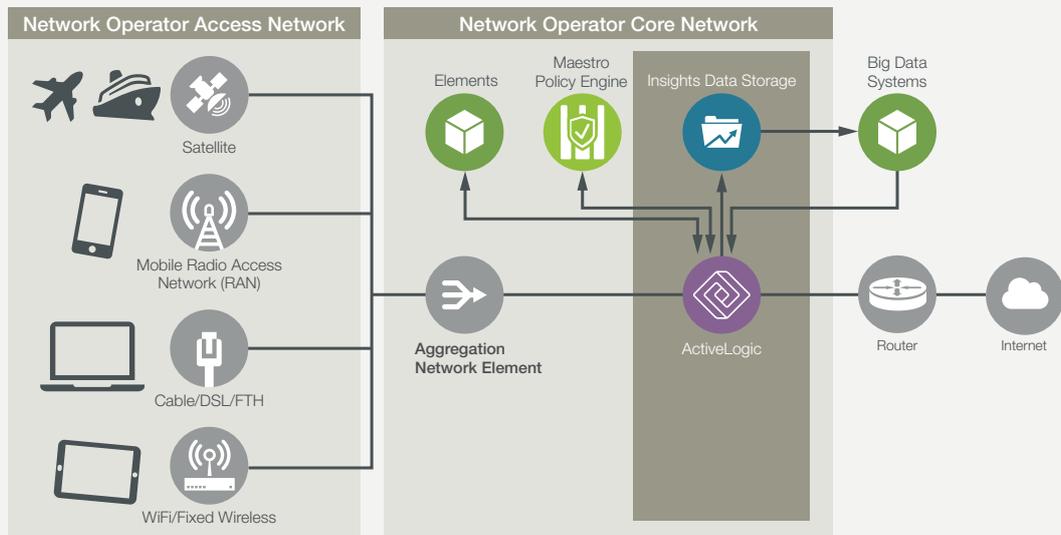
To accelerate the transition, Sandvine's COTS-based iQ42000 platform gives performance certainty for specific configurations at a low TCO. It is ideal for operators who are not ready for a virtual or cloud deployment today.

Regardless of access network (e.g., mobile, satellite, converged, cable, etc.), operators can take advantage of Sandvine's vast use case library and the underlying capabilities.

NETWORK INTELLIGENCE-BASED ENFORCEMENT FEATURES

Sandvine's ActiveLogic delivers network intelligence-based policy enforcement capabilities for enhancing and managing QoE.

- **REAL-TIME DYNAMIC LIVEVIEW QUERY ENGINE AND ELEMENTS** enables sophisticated real-time forensics to manage QoE, network congestion, and network security issues.

- **ANI CLASSIFICATION ENGINE** uses machine learning to identify applications in spite of encryption.

- **POLICY-BASED TRAFFIC MANAGEMENT CAPABILITIES** include asymmetric traffic control, distributed traffic shaping and filtering, traffic flow classification and prioritization, traffic monitoring, and packet re-write.

- **ADVANCED PACKET QUEUING**, including parallel queuing to enable more flexible traffic management policies, ensures predictable delay and jitter, enabling operators to meet their customers' QoE expectations.

- **FLOW-BASED METRICS** are gathered and exported to third-party systems via real-time interfaces such as Kafka or IPFIX for visualization and reporting.

- **ENRICHMENT DATABASES** augment existing provisioned data with other meta data for improved contextual awareness, including devices, location, web sites, applications.

- **ADVANCED TRAFFIC STEERING** combines ActiveLogic's capabilities with application delivery networking functionality to provide a single application delivery controller solution with unmatched performance and scalability, enabling service chaining with subscriber, service plan, charging, and Layer 7 awareness.

- **EVENT-BASED TRIGGERS** automatically apply policy in response to specified real-time network traffic conditions by dynamically enabling traffic shaping management or filtering.

- **BGP INTEGRATION** enables peering and CDN visibility, including QoE metrics support for Origin-AS and transit analysis.

- **LAYER 3 ADDRESSABILITY** for cloud environments requiring routing protocols through native BGP support.

- **CGNAT** maintains full visibility at the user layer across all use cases and in asymmetric environments.

- **SCORECARD** collects granular contextual awareness KPIs at high frequency, allowing operators to visualize the capability of the network to deliver QoE at a service level.

Sandvine's ActiveLogic equips operators with a simplified, hyperscale, automation-ready data plane to tackle the next era of network challenges. With ActiveLogic, operators have the flexibility, performance, and machine learning-powered traffic classification needed to keep up with internet phenomena.

ABOUT SANDVINE

Sandvine helps organizations run world-class networks with Active Network Intelligence, leveraging machine learning analytics and closed-loop automation to identify and adapt to network behavior in real-time. With Sandvine, organizations have the power of a highly automated platform from a single vendor that delivers a deep understanding of their network data to drive faster, better decisions. For more information, visit **sandvine.com** or follow Sandvine on Twitter at **@Sandvine**.

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