



Maestro Policy Engine and PSM

INTRODUCTION

Sandvine control plane migration from PacketLogic Subscriber Manager (PSM) to Maestro Policy Engine for an enhanced, scalable, and future-ready platform.

With the transition to Maestro Policy Engine, existing PSM deployments will benefit from functional enhancements and a feature-rich, 5G-compliant, control plane with robust redundancy and a cloud-based architecture.

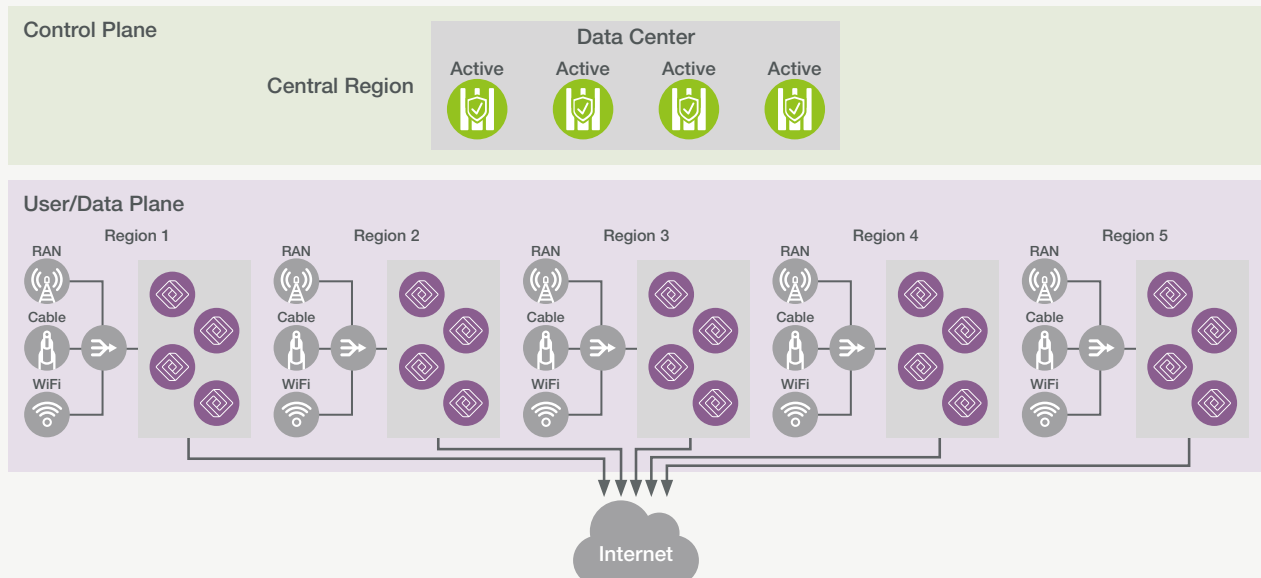
OVERVIEW

Maestro Policy Engine is high-performing, CUPS-compliant control plane. This evolution of Sandvine's existing control plane functions is designed to achieve granular policy control and innovative charging capabilities to suit the network needs of today, and the growing needs of tomorrow.

With a CUPS-compliant network, operators can reduce costs by deploying data plane nodes closer to the edge, and therefore don't have to transmit all data back to the core. This deployment change translates into reduced data center costs by hosting the data plane and the control plane in different geographic locations (**Figure 1**)

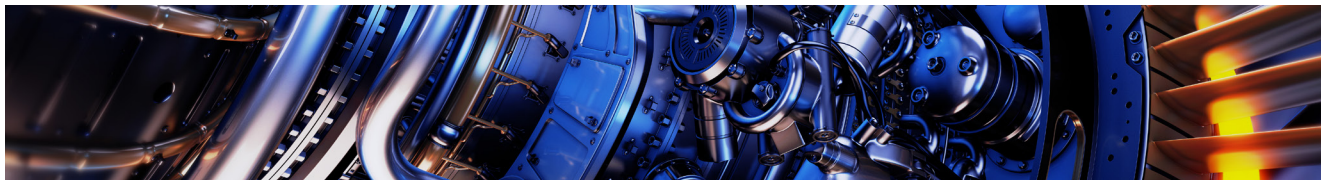
Figure 1

Maestro Policy Engine Deployment



PSM to Maestro Policy Engine Migration

Existing PSM deployments need to be migrated to Maestro to realize functional



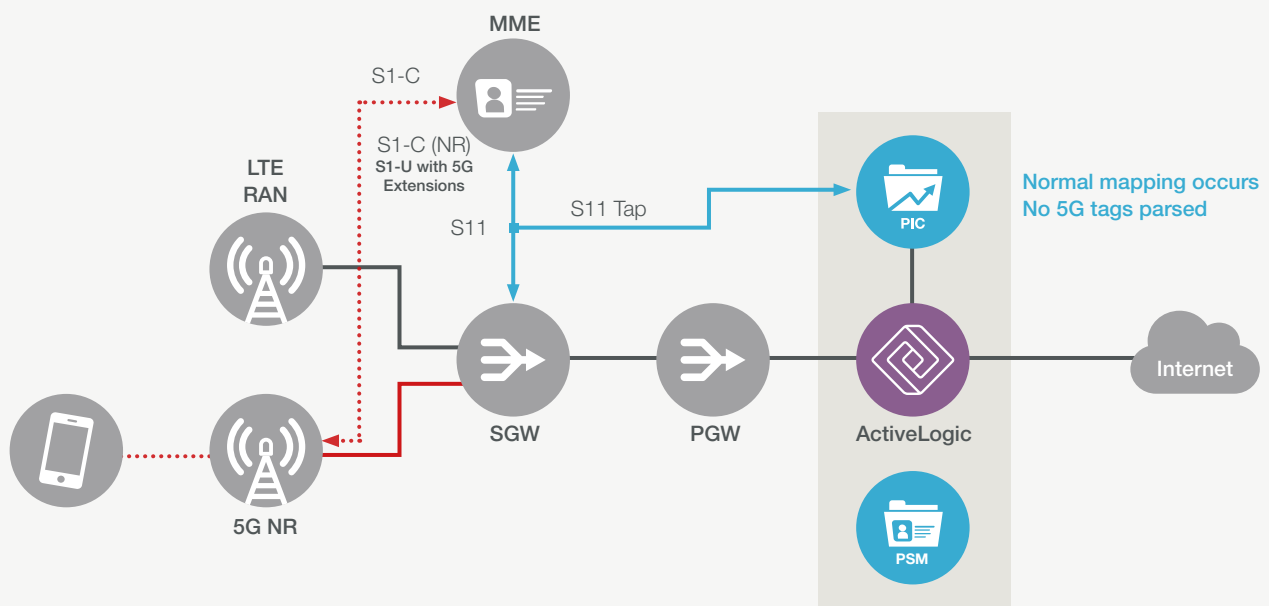
enhancements (5G) and architecture (CUPS) benefits, ensuring continued feature evolution and support.

A direct migration is supported, where Maestro Policy Engine replaces PSM while introducing a control plane node and a data plane node.

PSM support for 5G NSA deployments today is comparable to a 4G/LTE deployment with normal mapping and no parsed 5G tags (**Figure 2**)

Figure 2

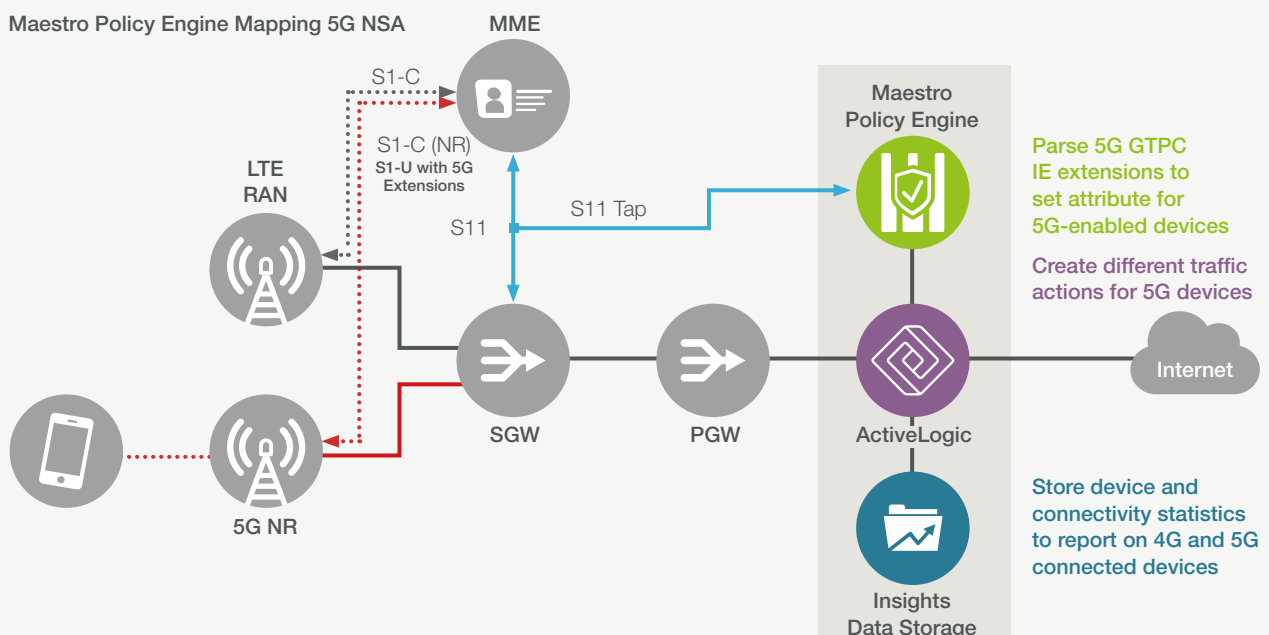
PSM offers the same LTE capabilities in 5G NSA deployments



With the introduction of Maestro Policy Engine (**Figure 3**), 5G GTP-C are parsed to identify devices connected to a 5G Radio.

Figure 3

Maestro Policy Engine Mapping 5G NSA

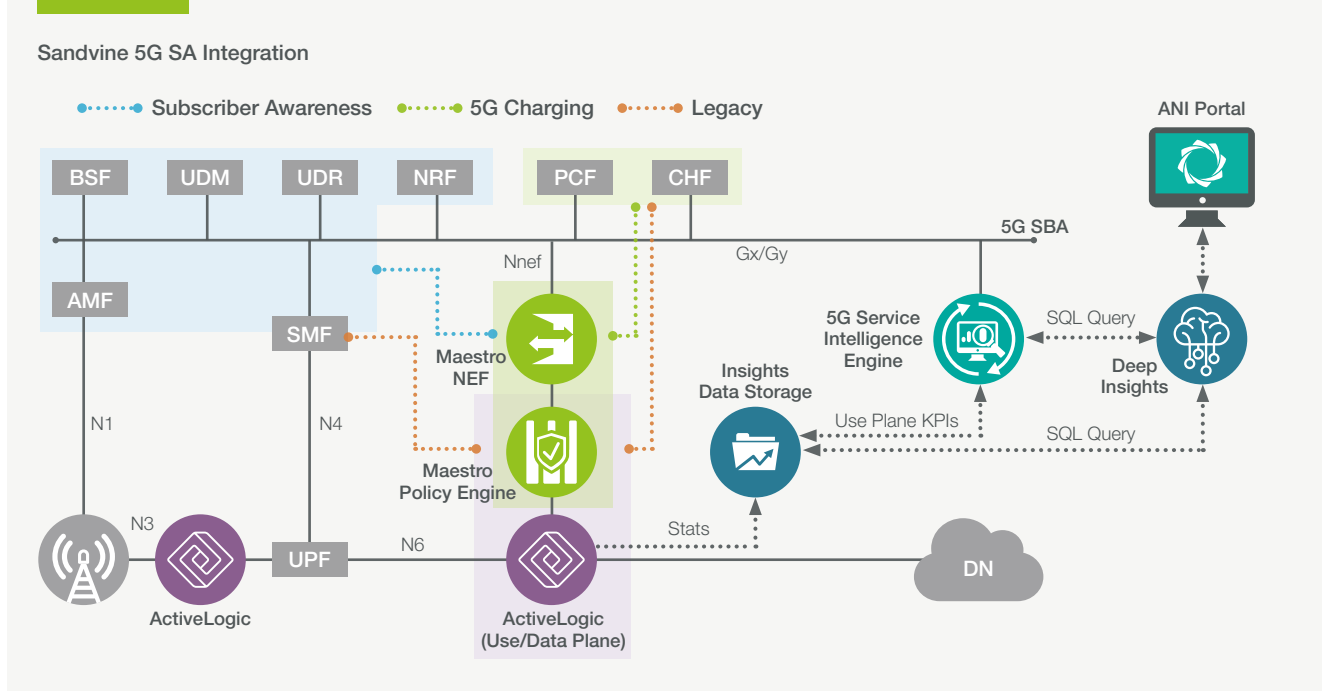




As stated, Maestro Policy engine is CUPS compliant, supporting an independent evolution of control plane and user plane nodes. It's also 5G-compliant with RESTful APIs (Service-based interface)

The solution is 5G NSA/SA ready, including 4G to 5G handover detection, helping the transition journey (Figure 4).

Figure 4



Features:

- Separation of Control Plane and User Plane (CUPS)
- Visibility, optimization, assurance, monetization of all 5G user traffic
- Cloud-native design offering elastic scale, performance improvement and agility in the core and edge
- Slice-aware visibility, action and charging
- Continue to serve legacy 4G PCRF/OCS Charging to reduce migration costs
- Existing Sandvine use cases compatible with 5G SA
- Vendor agnostic

High-Availability Options with multiple architecture clusters mode

PSM only supports N+1 Redundancy (Active/Passive) with no horizontal scaling, no load balancer. Whereas, Maestro Policy Engine can be introduced in the same architecture, or evolved with Active-Active high-availability architecture, ensuring resilient control plane, flexible deployment in a centralized location, and smooth expansion of nodes (Figure 5 and Figure 6)

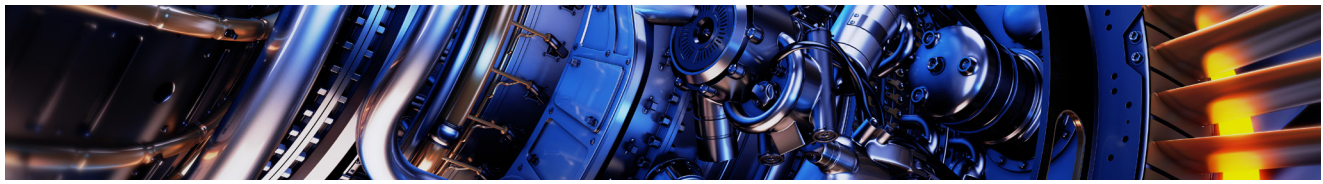


Figure 5

High-Availability Option Active-Passive Architecture

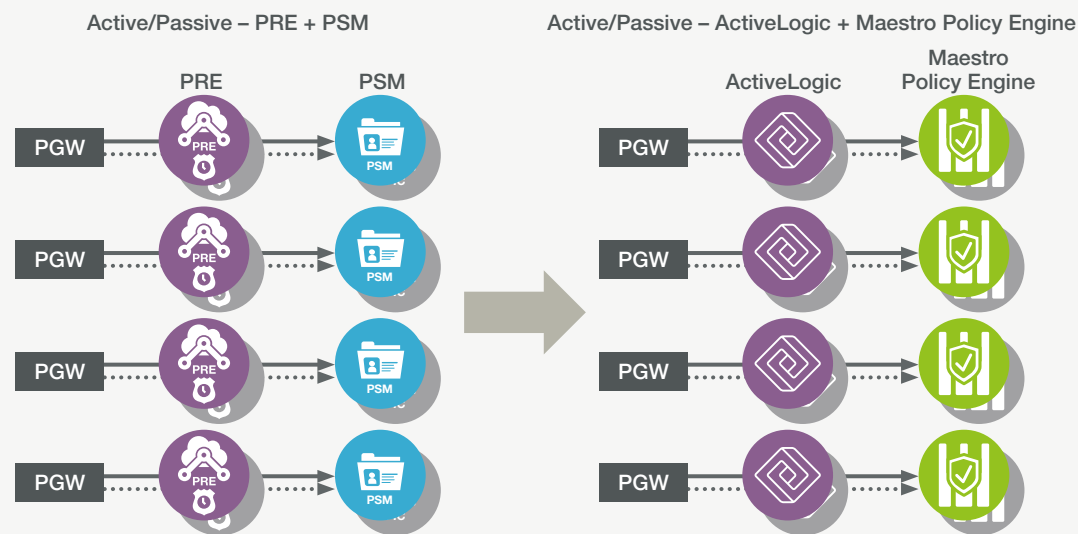
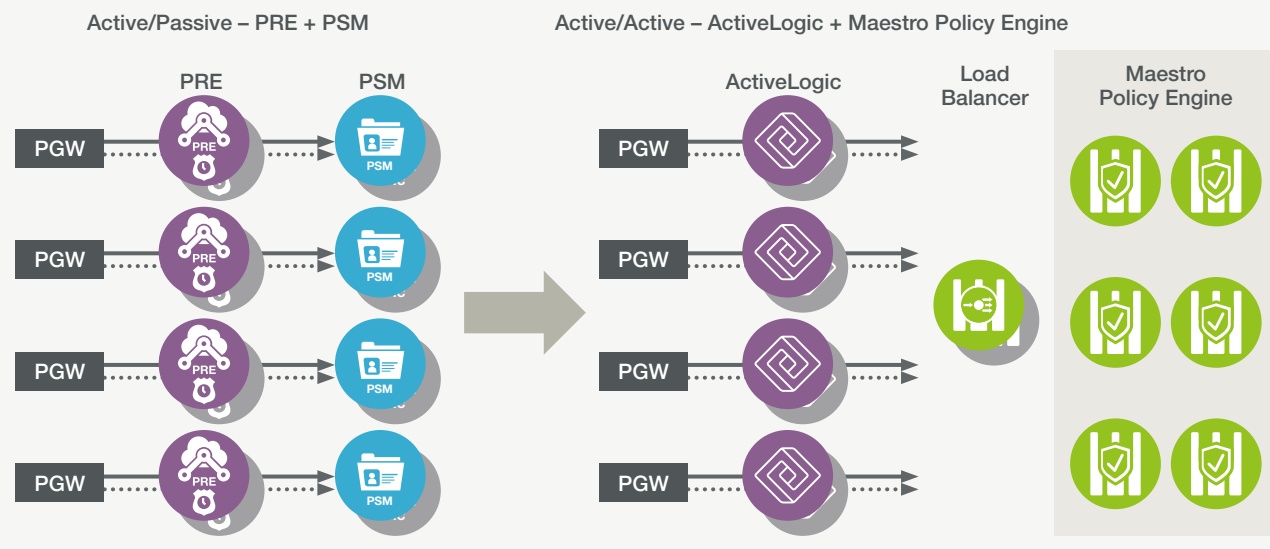


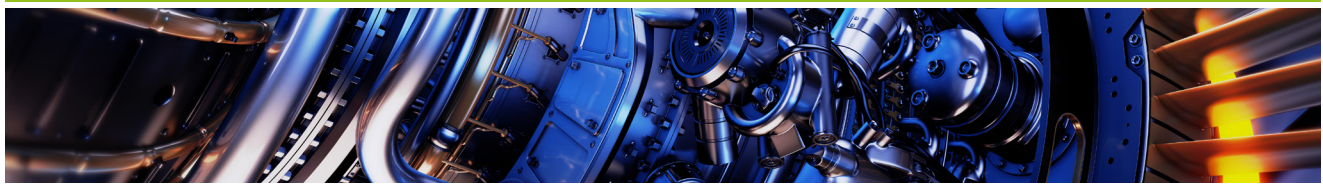
Figure 6

Horizontal Scalability and Geo-Redundancy Enhancements (Active/Active)



Features:

- All Maestro Policy Engine nodes inside the cluster are active at the same time
- The Load Balancer is a mandatory component in this mode
- Load Balancer redundancy model is the same as the one in Active-Passive hot-standby
- A maximum of 40 Maestro Policy Engines can be part of an Active-Active cluster
- When dimensioning, the subscriber capacity extra room should be planned so active Maestro Policy Engines can handle load coming from failed ones within the cluster
- Reduces overall cost of deployment
- Utilizes all of the deployed nodes
- Dynamically Scale in/Scale out
- Real-time, in-memory state, replication for high-availability architecture



Cloud-Native Ready

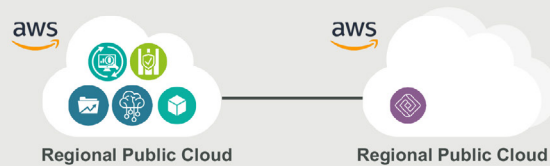
Maestro Policy Engine is part of Sandvine's cloud-native strategy to support multi-cloud and hybrid cloud deployments for complete the portfolio (in phases).

Figure 7 presents Sandvine cloud deployment architecture possibilities in Private, Public or Hybrid (OpenShift, and AWS supported)

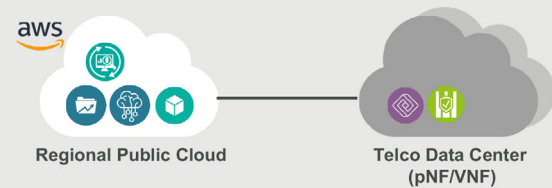
Figure 7

Example Cloud Deployment Architecture Possibilities

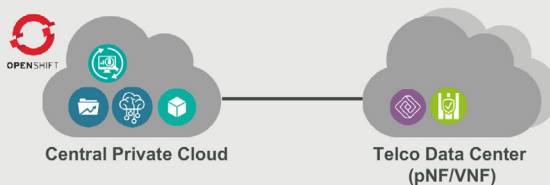
1. Public cloud End to End (24.20)



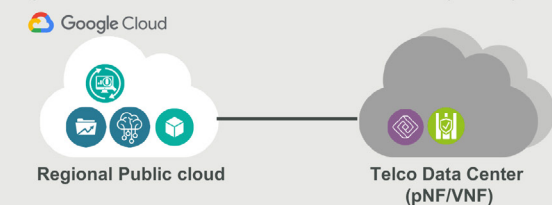
2. Hybrid with AWS and Telco Data Center (24.20)



3. Private cloud and Telco Data Center (23.31)



4. Hybrid with GCP and Telco Data Center (24.20)

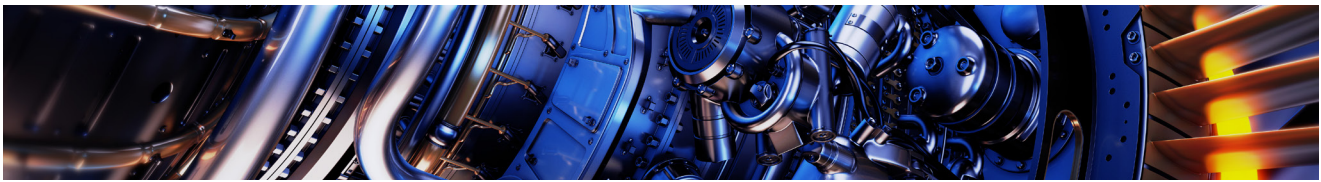


Performance enhancements

Maestro Policy Engine introduces performance enhancements in comparison to the PSM, including decreased mapping latency, increased mapping rates, and increased (Maestro – ActiveLogic) latency support. The table below (**table 1**) highlights the enhancements.

Table 1

Feature	PSM	Maestro Policy Engine (23.40 LTS)	Maestro - Load Balancer (v23.40 LTS)
GTP-C mapping	60K messages/sec	100K messages/sec	350K messages/sec
RADIUS mapping	60K messages/sec	68K messages/sec	240K messages/sec
DHCP mapping	40K messages/sec	60K messages/sec	N/A
JSON/UDP mapping	12K messages/sec	30K messages/sec	250K messages/sec
Diameter Sd	N/A	16K transactions/sec	60K transactions/sec
Diameter Gy	8K transactions/sec 60K counter updates	13.5K transactions/sec 80K counter updates	N/A
Session Context Link Latency	≤50ms	≤150 ms ≤250 ms (v24.20)	≤150 ms ≤250 ms (v24.20)



Maestro Policy Engine is equipped with Sandvine's powerful SandScript language, which:

- Allows for easy extensibility of mapping and use cases via a new Policy Engine
- Evaluates business logic rules in real-time.
- Enforces SandScript actions that affect network conditions and subscriber experiences.
- Defines measurements and collect statistics for gaining business intelligence insight of the network traffic, subscriber usage, application Quality of Experience (QoE), and more.
- Configures the function of different elements under specific circumstances.
- Rewrites Dynamic Diameter and AVP without changing the code
- Offers customizable xDRs

Maestro Policy Engine is a high-performing, CUPS-compliant control plane and offers a direct migration from existing PSM deployment, while introducing interface and performance enhancements to achieve granular policy control and innovative charging capabilities.

ABOUT SANDVINE

Sandvine's cloud-based Application and Network Intelligence portfolio helps customers deliver high quality, optimized experiences to consumers and enterprises. Customers use our solutions to analyze, optimize, and monetize application experiences using contextual machine learning-based insights and real-time actions. Market-leading classification of more than 95% of traffic across mobile and fixed networks by user, application, device, and location creates uniquely rich, real-time data that significantly enhances interactions between users and applications and drives revenues. For more information visit <http://www.sandvine.com> or follow Sandvine on Twitter @Sandvine.



USA
5800 Granite Parkway
Suite 170
Plano, TX 75024
USA

EUROPE
Svärdfiskgatan 4
432 40 Varberg,
Halland
Sweden
T. +46 340.48 38 00

CANADA
410 Albert Street,
Suite 201, Waterloo,
Ontario N2L 3V3,
Canada
T. +1 519.880.2600

ASIA
RMZ Ecoworld,
Building-1, Ground Floor,
East Wing Devarabeesanahalli,
Bellandur, Outer Ring Road,
Bangalore 560103, India
T. +91 80677.43333

Copyright ©2022 Sandvine Corporation. All rights reserved. Any unauthorized reproduction prohibited. All other trademarks are the property of their respective owners.

This documentation, including all documentation incorporated by reference herein such as documentation provided or made available on the Sandvine website, are provided or made accessible "AS IS" and "AS AVAILABLE" and without condition, endorsement, guarantee, representation, or warranty of any kind by Sandvine Corporation and its affiliated companies ("Sandvine"), and Sandvine assumes no responsibility for any typographical, technical, or other inaccuracies, errors, or omissions in this documentation. In order to protect Sandvine proprietary and confidential information and/or trade secrets, this documentation may describe some aspects of Sandvine technology in generalized terms. Sandvine reserves the right to periodically change information that is contained in this documentation; however, Sandvine makes no commitment to provide any such changes, updates, enhancements, or other additions to this documentation to you in a timely manner or at all.