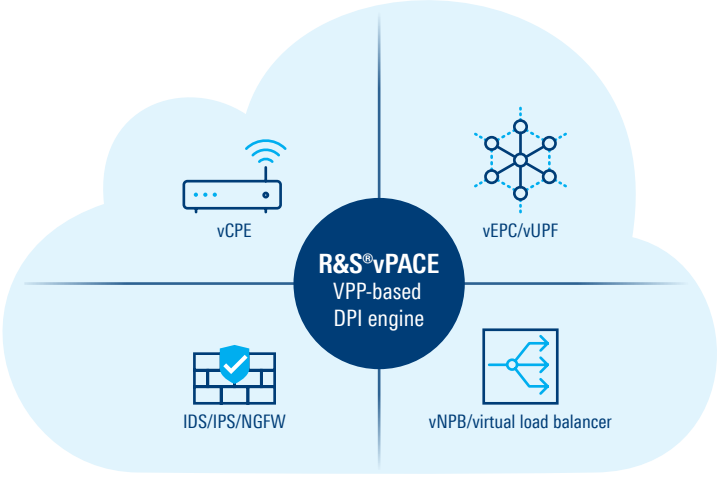
APPLICATION AWARENESS

R&S®vPACE

VPP DEEP PACKET INSPECTION ENGINE FOR PROTOCOL AND APPLICATION INSIGHTS IN CLOUD COMPUTING

R&S®vPACE is a vector packet processing (VPP) deep packet inspection (DPI) engine that empowers virtual network functions (VNF) through high-performance, real-time IP traffic classification of thousands of protocols and applications. It is optimized for cloud computing, specifically to meet visibility requirements for quality and security purposes. R&S®vPACE can be easily integrated as a VPP plug-in and shares the state-of-the-art signature portfolio of the leading scalar packet processing (SPP)-based DPI engine R&S®PACE 2.

With the shift to cloud-based networking, new computing methods driven by the performance and scalability needs of such environments are rapidly being adopted. The use of VPP, a cloud-optimized methodology based on batch processing of IP packets and a locally stored vertex memory cache, significantly improves speeds and latency. By using VPP, R&S®vPACE combines the advancements in cloud computing with the reliability and accuracy of its market-leading DPI techniques to deliver unparalleled, real-time traffic insights for virtualized and cloud-native functions (VNF/CNF) as well as 5G user plane functions (UPF) hosted and managed in the cloud.

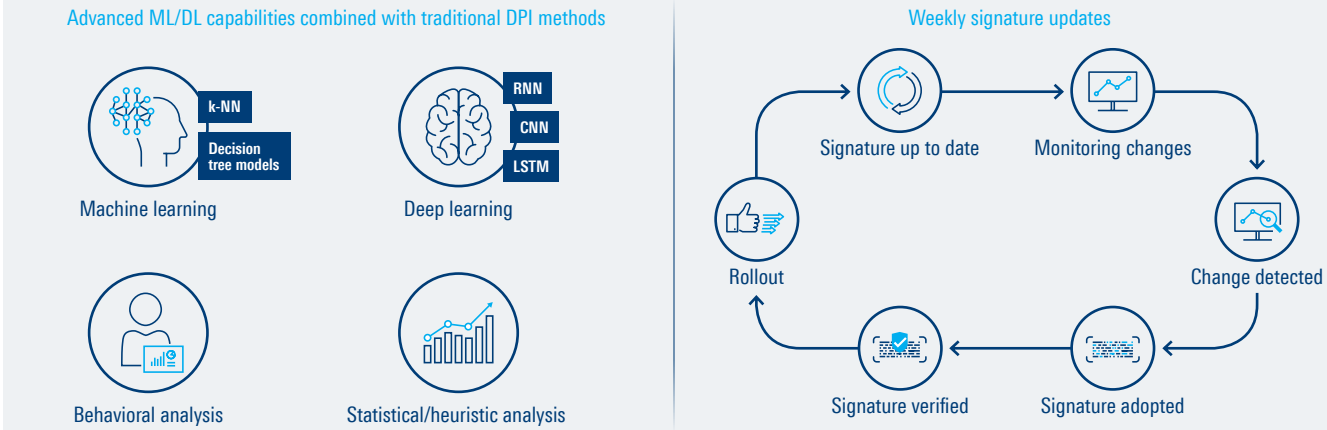


Key benefits of R&S®vPACE

- **Granular visibility**
  Identification and classification of protocols, applications and service types, i.e. video, chat, etc.
- **Metadata extraction**
  Metadata incl. network performance indicators such as jitter and speed metrics
- **High performance**
  Fastest real-time processing and most efficient memory utilization in the market
- **High accuracy and reliability**
  IP traffic classification with virtually no false positives
- **Weekly updates**
  Frequent signature updates that can be performed seamlessly during runtime
- **Encrypted traffic intelligence**
  Advanced machine learning (ML) and deep learning (DL) techniques to classify encrypted traffic

IPOQUE'S DPI SIGNATURE CORE

shared accross ipoque's suite of DPI products



Encrypted traffic intelligence

R&S®vPACE delivers encrypted traffic intelligence (ETI) by leveraging advanced ML and DL techniques in combination with high-dimensional data analysis and traditional DPI methods such as statistical/heuristic and behavioral analysis. ETI utilizes a mix of advanced ML algorithms combined with different DL techniques to maximize the classification accuracy of R&S®vPACE and to identify new traffic signatures, not only for encrypted traffic but also traffic anonymized by CDNs and VPNs, and traffic obfuscated by techniques such as randomization and domain fronting. ETI leverages over 1000 ML and DL features, including statistical, time series and packet-level features, and the ability to automatically identify and incorporate new features.

Benefits of licensing R&S®vPACE

- **Accelerate time to market**
  Stay ahead of competition and cut down on R&D costs by using a market-leading DPI engine
- **On-site support**
  On-site application engineering and performance optimization consulting
- **Flexible SLAs**
  R&S®vPACE product road map continuously aligned with customer needs and requirements

Key technical characteristics

- **Fast performance and linear scalability**
  A significantly improved average clocks-per-packet ratio, resulting in up to three times the speedup compared to SPP DPI engines
- **Small memory footprint**
  Less than 400 bytes per 5-tuple connection and 700 bytes per network endpoint
- **Environment and framework compatibility**
  Runs in cloud and virtualized environments with support for vector-based frameworks such as FD.io
- **Future-proof**
  Supports the latest encryption protocols, including TLS 1.3, TLS 1.3 0-RTT, ESNI and DoH
- **Thread-safe endpoint access**
  Enables thread-safe endpoint access across multiple worker cores, eliminating the need for endpoint-aware load balancing
- **Easy integration with well-defined APIs**
  Stable APIs with C public headers and integration examples
- **First-packet classification**
  Identification of applications on the very first packet for real-time traffic steering

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R&S®vPACE
Data without tolerance limits is not binding | Subject to change

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