

Strengthening Next Generation Network Packet Brokers with Deep Packet Inspection

By integrating high-performance service classification based on Deep Packet Inspection (DPI), Network Packet Brokers (NPB) can offer advanced features such as session filtering and traffic de-duplication to create the next generation of solutions. Enea's Qosmos ixEngine®, the market leading DPI engine, is a key enabler for these capabilities.

Key Facts

- ▶ Qosmos ixEngine is a DPI-based Software Development Kit that examines data packets crossing a network
- ▶ Real-time classification and metadata extraction, up to Layer 7
- ▶ Over 3200 protocols classified and continuously updated, 5000 application metadata extracted
- ▶ Able to classify encrypted traffic using statistical methods and pattern recognition
- ▶ Identifies sessions from end-to-end, over virtualized, physical or hybrid infrastructures.
- ▶ 100% accuracy with no false positives

Benefits

- ▶ Create integrated, real-time filtering mechanisms
- ▶ Create advanced features such as de-duplication
- ▶ Traffic filtering logic is more accurate and efficient, improving the effectiveness of downstream applications
- ▶ Expand the range of NPB functions to include security, performance management and analytics
- ▶ Greater granularity in traffic filtering
- ▶ Execute customer-defined rules at run-time
- ▶ Complement Qosmos Signatures with custom signatures for proprietary protocols or extensions

The Challenge

NPBs are under pressure from the relentless growth in traffic, the multiplication and constant evolution of security tools as well as the increasing complexity brought by virtualization and cloud technologies. There is increasing demand for NPBs to control more efficiently the volume and type of traffic sent to third-party tools and applications. The expectation is that NPBs should help to reduce the amount of off-line traffic, eliminate duplication of data processing and minimize tool sprawl.

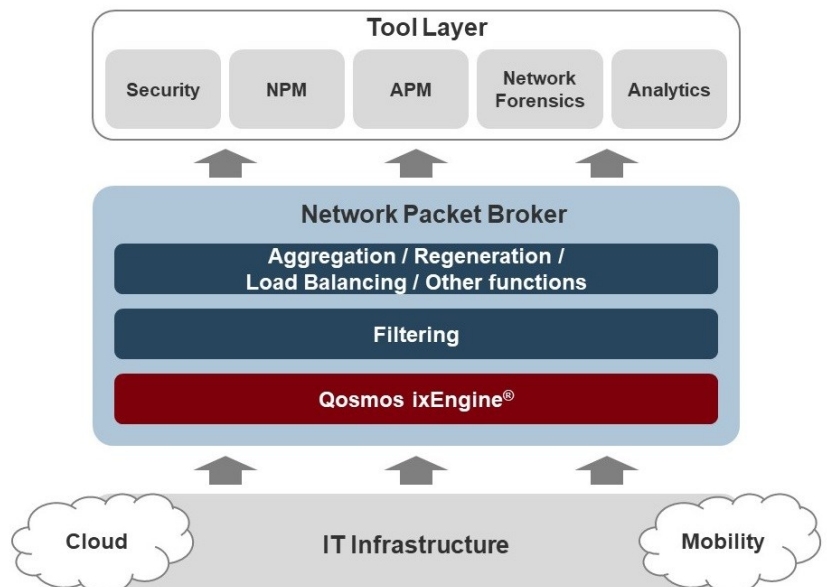
In other words, NPBs are now expected to play an active role in controlling and optimizing the flow of data to third-party management and security tools.

The Solution

To address these expanded requirements and remain competitive, vendors are adding application-awareness capabilities into their NPB solutions to perform more intelligent data processing. This is typically provided by a DPI engine, such as Qosmos ixEngine, coupled with rule engines to deliver flexible traffic filtering that is more accurate and efficient, improving the effectiveness of downstream applications.

How it Works

Qosmos ixEngine is a software library that provides real-time classification and metadata extraction, up to Layer 7, based on application and user information. This information can be used to create integrated, real-time filtering mechanisms based on application, session, flow, user/subscriber, device, raw or calculated metadata, rules-based business logic using any of the above information.



More Sophisticated Filtering & Extended Functions

By leveraging information from Qosmos ixEngine, NPB vendors can offer sophisticated filtering and other advanced features such as de-duplication to optimize the quantity and timing of data sent to any external tool. This information can also be used to expand the range of NPB functions to include security, performance management and analytics capabilities. NPB vendors adopting this approach can gain a competitive advantage against other NPB solutions but also capture part of the value being delivered today by point-solution tools.

Classification of Encrypted Traffic

Qosmos ixEngine is able to classify encrypted traffic using heuristics, statistical methods and pattern recognition.

Network Virtualization

Qosmos ixEngine operates in all types of architecture including virtualized and cloud-based. It has the ability to identify sessions from end-to-end, regardless of whether they use virtualized, physical or hybrid infrastructure.

Improved Traffic Filtering Logic

The combination of a powerful classification engine and extension modules, such as a rule engine, allow NPB developers using Qosmos ixEngine to create traffic filtering logic that is more accurate, more efficient and improves the effectiveness of downstream applications.

Comprehensive Network Intelligence

Qosmos ixEngine provides the broadest range of protocol and application recognition in the telecom, enterprise and security markets.

Feature	Details
Identification Protocols and Applications Behind IP Flows	<ul style="list-style-type: none"> Mobile Networks Wireline networks Any geography
Full Application Decoding	<ul style="list-style-type: none"> Classification Metadata extraction Content extraction Reconstruction of communications (e.g. Instant Messaging)
High Accuracy Rate	<ul style="list-style-type: none"> 100% accuracy with no false positives
Full Protocol Behavior Analysis	<ul style="list-style-type: none"> E.g. full http decoding to handle http proxying
Support of Complex Networking Behavior	<ul style="list-style-type: none"> GTP encapsulation VXLAN tunnels (GRE, L2TP, etc.) ...

Beyond IP Traffic Classification: Metadata Extraction

Qosmos ixEngine® provides the following categories of network-based application metadata and computed metadata:

Type of Metadata	Details
Volume	<ul style="list-style-type: none"> Volume of traffic per application and per user Size of a web page including all its components ...
Application Usage	<ul style="list-style-type: none"> Extraction of over 5000 application metadata Enables smarter decisions based on full understanding of user behavior E.g. HTTP URL, name of video played in YouTube, ...
Service Identification	<ul style="list-style-type: none"> Audio, video, chat, file transfer... For most popular VoIP and IM applications
Application Performance	<ul style="list-style-type: none"> Delay, jitter, application, user, etc. Computed metadata like VoIP MOS and RFactor
Identifiers	<ul style="list-style-type: none"> Any ID that can be used to implement strong security rules E.g. email sender, receiver addresses, ...
Content	<ul style="list-style-type: none"> E.g. attached file within an email Information can be directed to specific processing like anti-virus or content inspection
File metadata	<ul style="list-style-type: none"> E.g. codec and bit rate used in a Flash video Can be used for customer experience management, network security, etc.

Additional Modules for Advanced Functionality

Additional modules have been developed to provide greater data analysis through processing of classification data and metadata, enabling greater granularity in traffic filtering.

Feature	Details
Rule Engine	<ul style="list-style-type: none"> Execution of customer-defined rules at run-time E.g. correlations, aggregations, etc.
Custom Signatures	<ul style="list-style-type: none"> Complement Qosmos Signatures with user-defined signatures for proprietary protocols or extensions



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