

■ DATA TRAFFIC & POLICY MANAGEMENT

Deep Packet Inspection (DPI)

Application-aware traffic control and policy enforcement that turn data growth into revenue — from 2G to 5G.



3,300+

Protocols and applications recognised

100 Gbps

Throughput per CPU

2 Tbps

Cluster capacity

16M

Subscriber sessions per cluster

OVERVIEW

See, shape and monetise every byte

PROTEI DPI gives operators complete, application-aware control of their data traffic — the foundation for smarter tariffs, fair usage, premium services and a better subscriber experience on any access network.

Deployed as a standalone 3GPP **PCEF/TDF**, PROTEI DPI unlocks the full toolkit of data traffic management: flexible, service-based charging, bandwidth management, prioritisation and more. A built-in **signature constructor** lets your team create new signatures as new Internet applications emerge, so detection never falls behind the market.

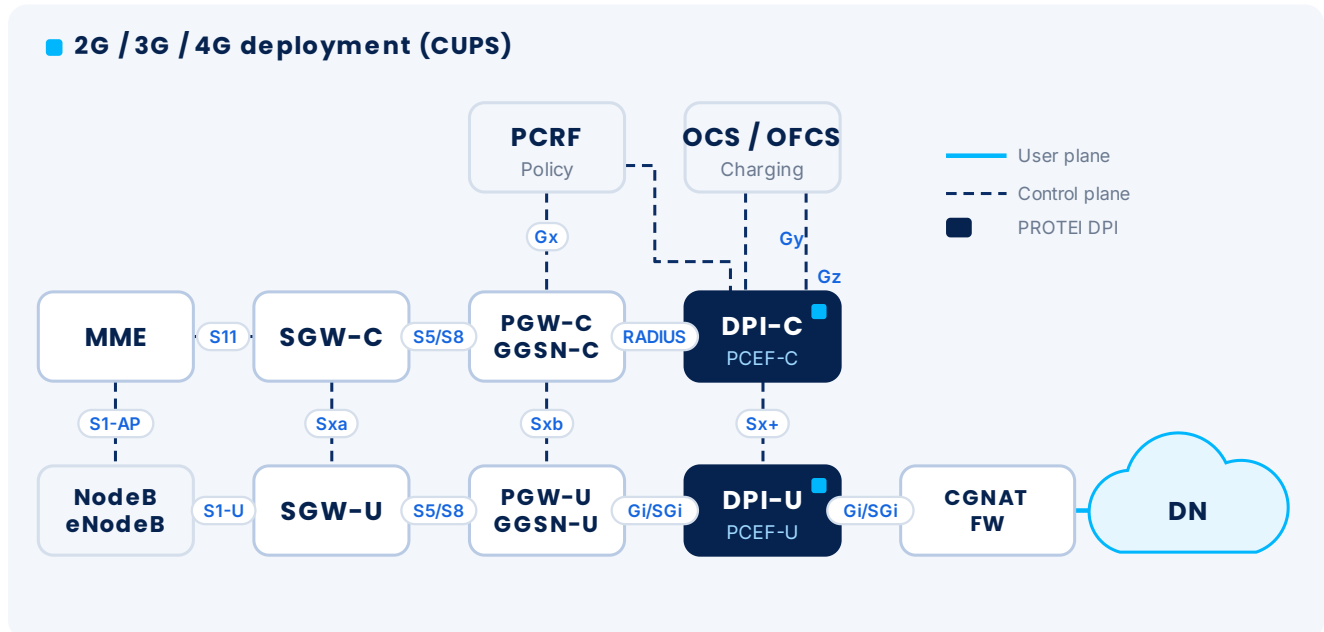
Statistical analysis identifies even obfuscated and encrypted protocols, while a regularly updated signature library speeds the launch of new services. Bit-rate control by service priority, traffic prioritisation and ToS/DSCP remapping protect the experience of the traffic that matters most.

Cloud-native and CUPS-ready

PROTEI DPI follows the industry-standard **Control and User Plane Separation (CUPS)** architecture, so operators can scale each plane independently and place the user plane at the network edge for low-latency, edge-computing services.

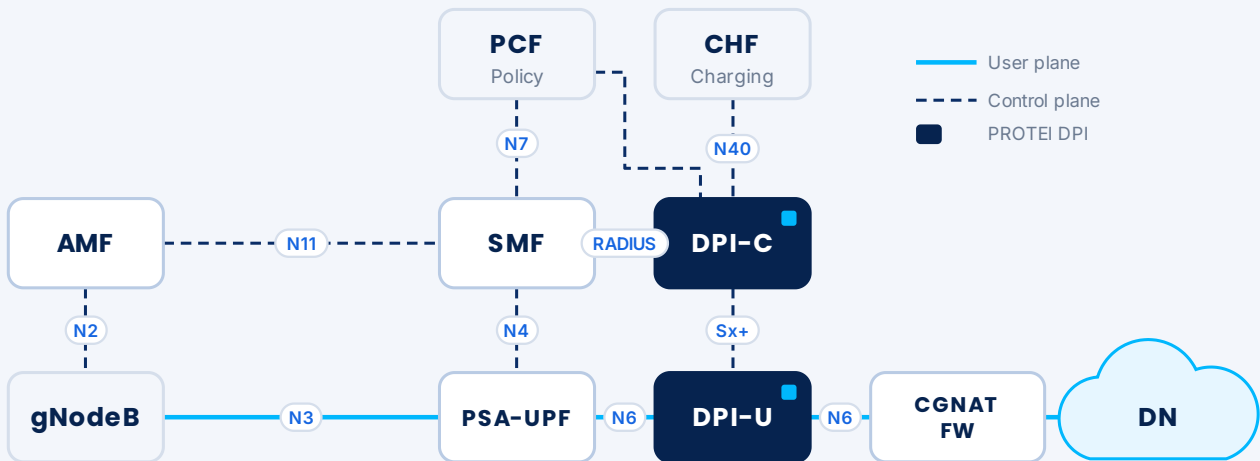
To keep the signalling network simple as you grow, PROTEI DPI is delivered as a **Virtual Network Function (VNF)** for your existing NFVI or NFV-MANO platform — or runs on bare metal or a standard hypervisor for medium-sized networks.

2G / 3G / 4G deployment (CUPS)



PROTEI DPI in a 2G/3G/4G network with Control and User Plane Separation

5G SA deployment



PROTEI DPI in a 5G Standalone core

WHY PROTEI DPI

Key Benefits

High-speed user plane

DPDK interfaces at 10/25/40/100GE, with 1/10/25GE control-plane interfaces.

Carrier-grade scale

Up to 100 Gbps per CPU; clusters of up to 2 Tbps and 16 million sessions with N+1 redundancy.

Hardware and cloud freedom

COTS x86 bare metal, VMware or KVM, and private, public or hybrid clouds.

Always-on experience

Optional internal and external bypass keeps subscribers online during failures, even without redundancy.

Any access network

Mobile from 2G to 5G, fixed broadband, Wi-Fi, satellite or mixed access.

One point of control

CUPS architecture in a VNF form factor, managed through a powerful CLI and web UI.

CAPABILITIES

Functionality

Traffic intelligence

- ✓ 3,300+ signature- and statistics-based recognition of L3–L7 protocols and applications
- ✓ 60+ web categories with daily updates
- ✓ Filtering by allowed or restricted IP, HTTP URL, SSL SNI and web category, with integration to external registries of restricted resources
- ✓ HTTP/HTTPS header enrichment and TCP enrichment
- ✓ 5,000+ protocol and application attributes extracted
- ✓ Application-based Fair Usage Policy (FUP)
- ✓ Tethering (line-sharing) detection
- ✓ HTTP redirection and DNS steering

- ✓ Fraud detection and prevention for ICMP, HTTP, DNS and SSL

■ Policy and charging control

- ✓ PCC rules via Diameter Gx (ADC) or HTTP N7, changed on the fly with no service interruption
- ✓ Online charging via Diameter Gy or HTTP N40, flow- or event-based
- ✓ Multiple Diameter links over TCP/SCTP, DRA integration, routing by service group, flexible CCFH and session failover

■ Integration and operations

- ✓ Subscriber identification from RADIUS flows of GGSN, PGW, SMF, BRAS and BNG, including RADIUS carbon-copy
- ✓ Traffic diversion to VAS platforms in VLAN and NSH modes
- ✓ CLI and web-based configuration and statistical reporting
- ✓ Fully customisable software

- ✓ IP network quality measurement: RTT, QoE and payload delays, with statistics for every IP flow

- ✓ Dynamic per-subscriber, per-flow enforcement by time, location, terminal type, scoring model, usage or congestion
- ✓ Offline charging via SFTP Gz in pull or push mode, for prepaid, postpaid or hybrid models

- ✓ Service groups built from RADIUS data, each with its own policy and charging
- ✓ Overload control for the platform and connected systems; multiple DPI engines supported
- ✓ JSON/AVRO IP data records with native ClickHouse and Kafka integration for big-data analytics; ASN.1 CDRs

■ MONETISATION

Policy and charging, per subscriber

PROTEI DPI enforces policy and charging rules for every subscriber. Each subscriber receives a policy that defines their services, QoS and priority, so **premium plans keep their performance during congestion** while economy plans absorb the impact.

Policies are usually defined on the PCRF, but can also be configured locally without quota control. Dedicated bandwidth limiters can be created for any group of subscribers, base stations, regions or other session attributes.

■ Flexible charging models

- By volume, by time, or by volume and time with credit-pool support
- By event, over Diameter Gy, HTTP N40 or FTP/SFTP Gz
- Usage monitoring without charging, over Diameter Gx or HTTP N7

■ More than policy — a VAS platform

- Divert traffic to external VAS or partner systems
- Collect insight into subscriber preferences for better-targeted campaigns and QoS tracking
- Restrict access to prohibited content and categorise traffic with daily-updated internal sources



PROTEI DPI analytics: real-time protocol and traffic reports

USE CASES

What operators build with PROTEI DPI

Application-based tariffs

Social, video or gaming passes and zero-rated partner services, charged per application.

Fair usage & congestion

Application-aware FUP and per-subscriber priorities that protect premium plans at peak times.

Content filtering

Parental and corporate controls with 60+ daily-updated web categories and national blocklists.

Partner & VAS revenue

Header enrichment and traffic diversion to partner and value-added service platforms.

Tethering control

Detect line sharing and apply the right policy or charging to hotspot traffic.

Network & QoE analytics

RTT, QoE and per-flow statistics streamed to big-data platforms via ClickHouse and Kafka.

Ready for your network

PROTEI DPI integrates with PROTEI PCRF/PCF, OCS and VAS platforms — and with third-party core equipment — for a fast, low-risk rollout.



■ ABOUT PROTEI

Carrier-grade telecom solutions since 2009

Founded in 2009 and headquartered in Amman, Jordan, Professional Telecommunication Incorporation (PROTEI) designs and delivers carrier-grade software for mobile and fixed network operators, MVNOs, enterprises and governments. Our portfolio of 50+ systems and solutions spans core network, roaming, messaging, value-added services, data management, public safety and customer care.

With development centres in Jordan, Europe and the CIS, live deployments across the Middle East, Europe, Africa, Latin America, Central Asia and the CIS, and regional offices in the UAE and Central Asia, PROTEI serves more than 400 clients. Every platform is designed in-house under ISO 9001:2015 and ISO 14001:2015 certified quality management.

17

Years in telecom

400+

Clients worldwide

45

Countries

50+

Systems & solutions

Turn your network into your next growth engine.

Talk to our experts about data monetisation, policy control and DPI — and see how PROTEI can help you grow revenue, cut costs and protect every subscriber.

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