6WIND
Virtualized Networking Software

6WIND Cloud

## Key features

- **High Performance**
- **Scale In & Scale Out capabilities**
- **High Resiliency**
- **Ease of deployment**
- **Easy management and operations**

## Benefits

- Reliability & Flexibility
- Increased deployment agility
- Optimized use of resources
- High scalability
- Low TCO

# 6WINDCloud: Cloud Native Solutions

## 6WINDCloud is a cloud native networking architecture that delivers high performance, scalable and resilient network services to address CSP networks.

6WINDCloud relies on Kubernetes and delivers virtualized and containerized network functions used to build diversified flexible and optimized network solutions that scale automatically and on demand to develop the required performance.

6WINDCloud implements service disaggregation and distribution to provide scalable, flexible, optimized and resilient cloud native network solutions.

Per design, 6WINDCloud achieves both performance scale-in and scale-out. This allows defining optimized services that can easily adapt with a performance requirement that varies over time.


## Detailed Features

### High Performance

6WINDCloud is a fully software-based solution that leverage the 6WIND's core technology to deliver the highest performance. 6WINDCloud is designed to optimize resource usage and drive the maximum performance from the virtualization platform resources. 6WINDCloud relies on a hardware agnostic software design optimized to drive the best performance from an x86 or arm multiprocessors CPU architecture.

### Scale-In and Scale-Out Capabilities

6WINDCloud leverages virtual network functions and containerized network functions that scale linearly with the CPU resources allocated to run these network functions.

When more performance needs to be developed, 6WINDCloud leverage either the scale-in capability by allocating more CPU resources to running instances, or the scale-out capability by instantiating multiple running instances of the same network function and using a load balancer to automatically dispatch traffic, based on predefined policies, between all the running instances.

The load-balancer acts as an intelligent element that spread equally traffic between each instance based on either throughput, or number of flows, or a combination of both. The way the load balancer acts is defined through user policies.


6WIND
WWW.6WIND.COM

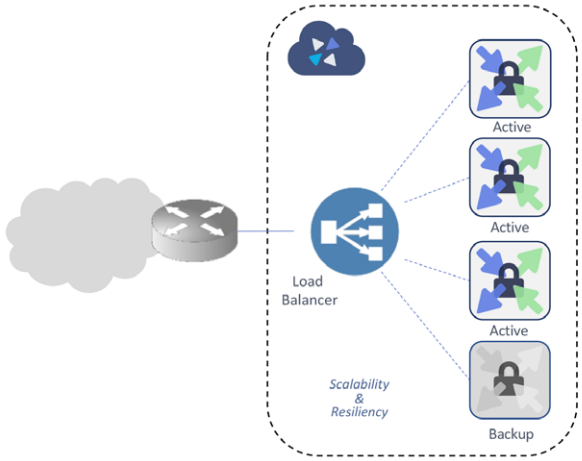
6WIND EMEA
Paris, France

6WIND Inc. Americas
Santa Clara, CA

6WIND APAC
Singapore

## High Resiliency

6WINDCloud implements resiliency by instantiating backup instances ready to take-over the traffic processing when an active instance fails. The deployed high availability model can be adapted to the delivered cloud native service.




The High Availability (Resiliency) capability is enabled through the load-balancing function. The load-balancer handles dispatching the traffic between active instances and backup instances when a failover occurs.

## Ease of Deployment

6WINDCloud relies on Kubernetes to deploy all the components required for building any supported service. Network functions instances, that are used to build services, are deployed either as VNFs or CNFs with predefined profiles.

Provisioning and Day1 configuration of deployed instances are automatically done as part of the deployment process.

## Ease of Management and Operations

6WINDCloud exports generic APIs to allow managing the deployed services.

In addition, 6WINDCloud provides support for different other tools for management and monitoring including Cloud-init, SNMP, and sflow that ease management and operations.

To simplify operations, 6WINDCloud offers a flexible deployment capability that rely on built-in features including auto-scaling (i.e., automatic service scale-out based on pre-defined performance thresholds) and self-healing (i.e., automatic failure repair to maintain a service continuity)

## High Automation

Automation is a key built-in feature in 6WINDCloud. It is meant to simplify the life-cycle management of the deployed services. This feature includes zero-touch provisioning, automated deployment, automated maintenance and upgrades, automated scaling and resiliency.

## Service Orchestration

6WINDCloud leverages Kubernetes to provide a low-level and a high-level service orchestration. This service orchestration enables fine grained capabilities for resources management and optimization. By combining the different key features of automation, health status monitoring, autoscaling and self-healing, 6WINDCloud is able, through the service orchestration, to continuously optimize resources (CPU, Memory, HDD) consumption in order to always deliver the required quality of service without over-dimensioning the service which translates into service profitability.

6WINDCloud can be integrated with different Kubernetes based 3rd party orchestration tools or cloud native platforms including RedHat Openshift, VMware Tanzu, Robin.io, etc.

## Multi-Level Monitoring

6WINDCloud provides rich technical and business KPIs combined with advanced analytics and functional alarms to enable building granular and multi-level monitoring dashboards.

These dashboards cover three monitoring levels;

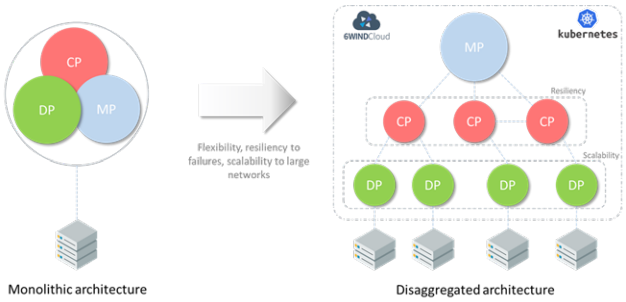
- **Infrastructure:** Provides details on the virtualization resources (CPUs, Memory, HDD, NICs, etc.)
- **Network functions:** Provides details on how each network function is behaving (resource consumption, technical metrics, performance stats, etc.)
- **Service:** Provides details on how the service is performing (metrics on performance, business analytics, efficiency, etc.)

# 6WINDCloud Architecture

6WINDCloud relies on 6WIND's expertise in high performance networking solutions to deliver optimized architectures and designs for x86 and arm multi-processor platforms.

6WINDCloud adopts the cloud native design to deliver the network services through a disaggregated and distributed architecture that enables achieving a higher scalability, an improved flexibility and an enhanced resiliency to failures.

The service disaggregation can be achieved at different levels; deployment (by disaggregating the hardware and the software) or functional (by disaggregating the different component that build the service).

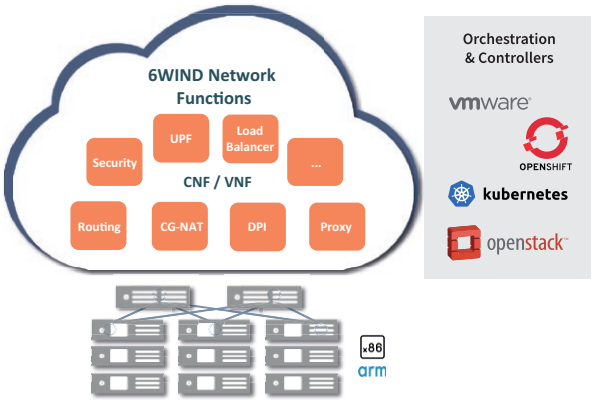



Monolithic architecture

Disaggregated architecture

To deliver the required high performance, the 6WINDCloud adopts advanced implementation and design concepts including:

- Separation of control plane and data plane to enable independent scaling and independent lifecycle management of both planes.
- Lockless data plane implementation for a consistent minimized latency
- Optimized data plane that benefits from a multi-processor environment to deliver high scalability (scale-in capabilities).
- Leverage HW acceleration when available to deliver the highest possible data plane performance and drive the best from the available HW resources.
- Data plane distribution based on performance requirement to achieve scale-out capabilities.
- Container based network components for an enhanced deployment agility

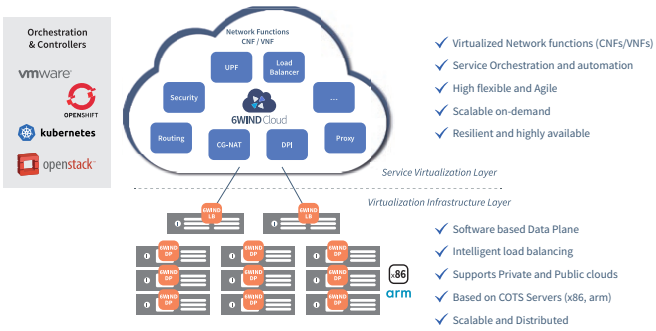



Thanks to these advanced implementation and design concepts, 6WINDCloud allows:

- Optimized usage of deployment environment's resources
- High performance for both control and data planes
- Advanced redundancy features
- Resilient cloud scaling

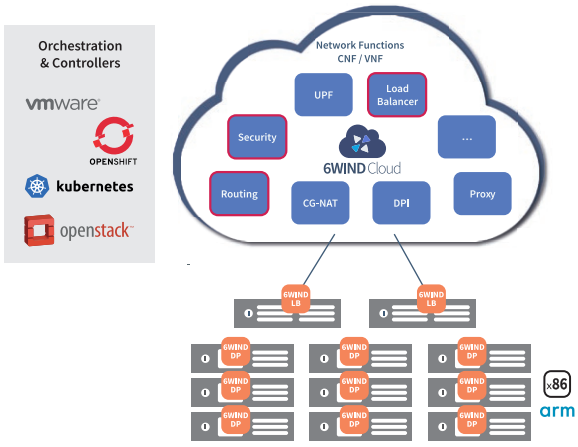
## 6WINDCloud Services

6WINDCloud delivers different cloud native services based on unitary virtualized and containerized functions (VNFs and CNFs) including Routing, security, CG-NAT, DPI, UPF, load-balancer, HTTP/HTTPs Proxies, etc.




The different available network functions can be combined and chained to deliver the required service. Each network function scales independently from the others according to the requirements of the deployed service.

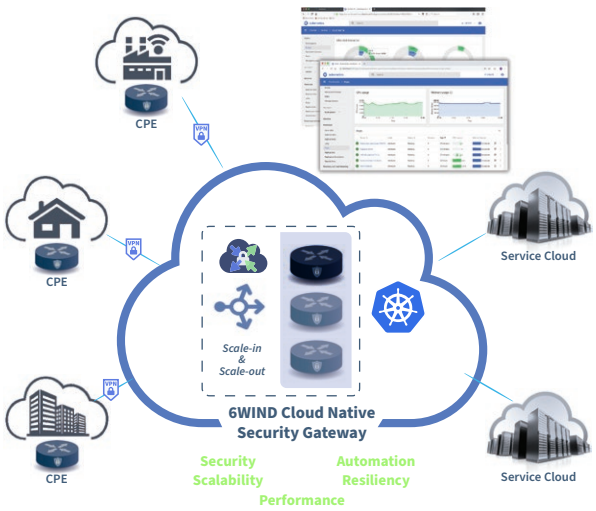
For instance, a cloud native security gateway service requires leveraging the following three functions: security, routing and load-balancing.




The security and router functions are needed to implement a security gateway that scales horizontally through the load-balancer function.

The load balancer function dispatches the traffic between active security gateway instances and handles traffic redirection to backup instances on failure.

By combining the three functions, 6WINDCloud delivers a highly scalable (scale-in & scale-out) and resilient cloud native security gateway service that leverages the automation, management and orchestration capabilities to fulfill service providers requirement for securing access to a service cloud.




Other cloud native services can be deployed based on the 6WINDCloud to deliver the required capabilities for service providers and enterprise use cases at the core and the edge.