## efficient iP®

# DNS–DHCP–IPAM (DDI) for Telco

Digital transformation projects, multi-cloud, 5G and IoT are bringing deployment of new architectures like NFV, SDN and SD-WAN. For Telecom operators and ISPs, these make IP networks increasingly complex to manage and evolve to cater for new usages requiring ultra-low latency.

Being a foundation for IP networks, DDI is undoubtedly a critical technology for any service provider wishing to ensure service availability, strengthen security and enhance user experience.

Automated DDI management is mandatory for enabling a responsive network that ensures users can access mission-critical apps, while offering zero-touch operations for improving productivity of network teams.

With its integrated DDI, DNS security and intelligent traffic steering via Edge DNS GSLB, EfficientIP SOLIDserver brings an all-in-one platform to enable optimization of telco network architectures.

## Solution Benefits

| | |
|---|---|
| **REDUCE COSTS UP TO 70%** | Simplified, highly scalable IP and security architecture |
| **ENSURE 99.999% RELIABILITY** | Rich topology capabilities, clustering and inherent resiliency |
| **ENHANCE PERFORMANCE** | Fastest available DNS and DHCP servers, reducing latency |
| **IMPROVE USER EXPERIENCE** | Intelligent user to app traffic steering to guarantee availability |
| **HEIGHTEN SECURITY** | Client behavior analysis, filtering, adaptive countermeasures |
| **EASE DEPLOYMENT** | SmartArchitectures templates easing NFV management |
| **80% ADMIN TIME SAVINGS** | Zero touch provisioning via smart automation with open APIs |
| **IMPROVED IP NETWORK CONTROL** | Source of Truth data, multi-tenant resource visibility, IPv6 support |

## Business Challenges

With the rollout of 5G and other IT/network projects, service providers are most likely facing one or several of the issues below:

- High TCO and architecture complexity due to large number of hardware components (many boxes)
- Resilience challenges - for ensuring service continuity, High availability, Anycast/ECMP (equal cost multi path)
- Service scalability limitations, especially for new 5G usages
- Difficult to handle subscriber volumes - DHCP security risks
- Poor UX due to latency and performance issues - DNS QPS
- Security gaps permitting data theft, illicit communications and DNS attacks
- Slow rollout of new apps and services

- Poor visibility of IP resources across multi-tenant and cloud infrastructure
- Difficult to manage IP address plan across multiple geographies
- Complex to support coexistence of IPv4 and IPv6 addresses
- Time-consuming IP management tasks
- Configuration errors due to manual non-integrated processes
- Compliance filtering difficult to deploy and manage e.g. for Parental Control offers
- Complex integration with ecosystem players due to restrictive APIs

## efficient iP®

## Main Features – Value Brought by DDI Solutions

Telco and service providers are reliant on their data network for their offers, services and associated revenues. Any service interruption is unacceptable for subscribers, necessitating robustness for the network as well as every part that enables it: supervision, provisioning, billing... Having to support legacy services while innovating in new services to support customer requirements is stretching the whole infrastructure. In telco environments, SOLIDserver has repeatedly proven its ability to bring very important capabilities:

- SOLIDserver runs all its components out of a single image for easy deployment and maintenance. The core services can be deployed in high availability and high performance designs allowing support of mission critical customer services.

- DNS and DHCP services are the most powerful on the market, enabling telcos to handle large subscriber volumes with topologies that are simple to design, deploy and administer.

- DNS core service promotes service continuity through patented innovations which easily isolate faulty devices, stop early any denial of service activities and mitigate errors on the Internet network and authoritative DNS components.

- DNS and DHCP services can be deployed easily thanks to simplified architecture models limiting workload, time for service activation and operational costs.

- Data manipulation based on an IPAM centric architecture helps achieve error-free configuration by using templates, provisioning rules and data validations during the entire life-cycle process.

DDI has a major role to play in the IT of telcos, ISPs and MSPs. By enabling core services like DNS and DHCP it enables IP services in the foundations: 1. Resolving service and application addresses based on their names, 2. Providing an IP address to any component and device on the network. The IPAM manages the network and IP data in a structured and dynamic manner, allowing automation, orchestration on reliable data, service monitoring and billing capabilities.

Where virtualization is the main way to deliver and enable services, using Virtual Network Functions, IP address planning and monitoring becomes mandatory. It allows managing networks ever-growing in capacity, endpoints and flexibility, with reduced and controlled manpower. Usage of automation inside the DDI environment and with all the other tools and solutions helps automate the network and global IT of the telecom provider. Where subscriber numbers and usage are growing, performance and scalability are required, through horizontal scalability and optimized core service engines. This is why EfficientIP proposes very powerful DNS and DHCP services able to simplify architectures and used resources, from the core to the edge of the network.

In addition to standard DDI functions, SOLIDserver brings:

- DNS and DHCP services as functions, running from full virtual appliance solution to small containers able to start in seconds on edge infrastructures.

- The ability to use rich metrics to scale up and tear down new services to handle the traffic, user localization movements and resiliency scenarios.

- Zero touch provisioning and automated deployments through SmartArchitectures, design proven templates and configuration management.

- Advanced security leveraging the DNS infrastructure through request firewalling and Client Query Filtering.

- DNS Service protection with automated countermeasures protecting cache and recursive availability for all services and subscribers under DDOS attack or massive Internet service disruption.

- Open API with full service coverage for IT automation and Infra As Code

- Reduced latency via Edge DNS GSLB functionality, using intelligent application traffic routing to identify the most responsive application server
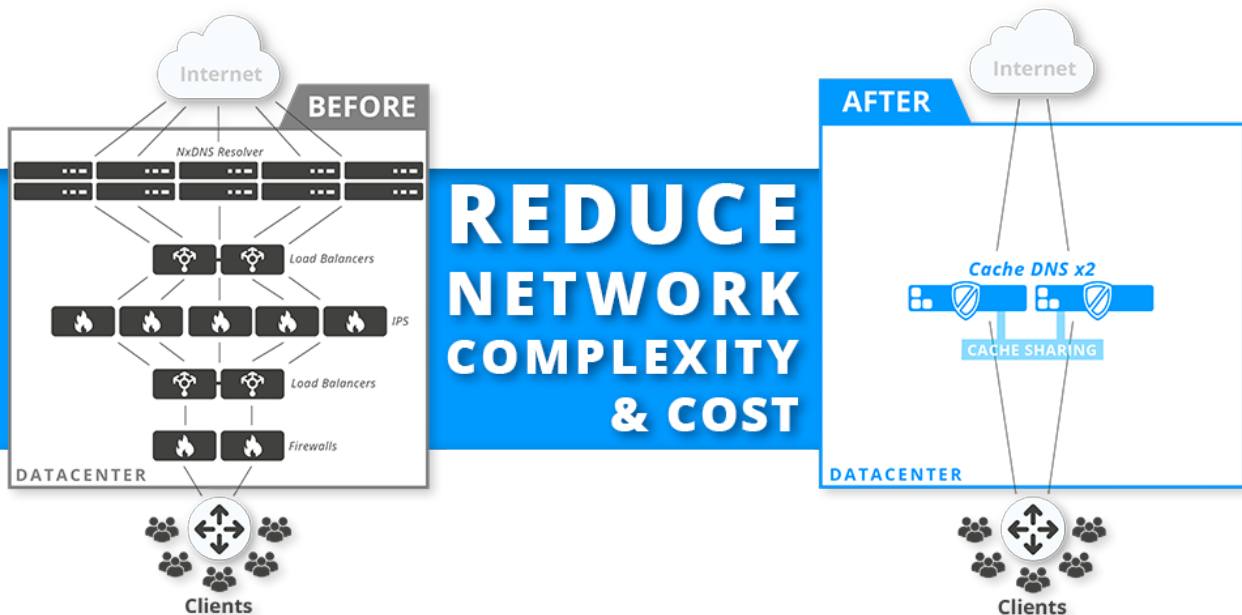
## Example Use Cases

**Lawful Interception:** Many countries impose regulatory requirements on ISPs and telcos to filter DNS domains based on a regularly updated list. The DNS Firewall feature of SOLIDserver helps manage the lists and apply filtering at the recursion level. Having the ability to implement multiple lists, the firewall is able to apply the governmental filtering layer at the appropriate level in the treatment, for some or all subscribers.

**Infrastructure cost optimization through frugal design:** For high numbers of subscribers, lack of performance in the core service implies adding infrastructure which increases overall cost. SOLIDserver core services, including DNS and DHCP, have been optimized to support more traffic and more subscribers. By reducing the amount of appliances required for the service, cost is optimized for handling even millions of subscribers.

**Parental Control:** Whether for regulatory compliance, or as a revenue source, parental control is challenging to offer as a simple to use/configure solution without needing to deploy massive infrastructure. DNS is a really good solution for that, and with its Guardian and Client Query Filtering capacity, SOLIDserver can help Telcos and ISPs add the necessary level of filtering. Leveraging existing DNS infrastructure for domain categories and device traffic analysis allows parental control to be proposed at an affordable price, increasing the number of potential subscribers.

**Deployment quality control:** Deploying multiple PoPs in the field requires templates, models and methodology. Original design information may deteriorate, so a major benefit of a rich DDI solution is its ability to manipulate networking and IP data in a way that can differentiate what is in the design and what is observed in reality. SOLIDserver Netchange/IPLocator collects on a regular basis the reality of the network installation and compares it to the repository, acting as a source of truth to help governance. From this, telcos have developed specific reporting tools to remediate the situation, ensuring fast incident response, easy war room documentation access and optimization of the deployed infrastructure on a national scale or beyond.

**Migration to IPv6:** The complexity of IPv6 addresses requires a sophisticated IP address management tool. Transition can be a lengthy process, meaning that for a while your network will use both IPv4 and IPv6 addresses. With SOLIDserver, EfficientIP offers a risk-free solution fully compliant with IPv6 to help you manage multi-tenant IPv6/v4 addressing plans and DNS/DHCP services in a fully integrated solution, ensuring performance, scalability and high availability of your network.

## Key Takeaways

A smart DDI can significantly help Telcos optimize network Infrastructures to enhance availability and performance. With SOLIDserver DDI you get:

- Improved business continuity with all-in-one DNS solution delivering carrier-grade performance, transparent resilience and built-in security

- Enhanced operational efficiency thanks to automated provisioning/deprovisioning and IP data sharing, major steps towards autonomous networks

- Reduced costs due to smarter architecture and lower number of boxes

**Americas**
EfficientIP Inc.
1 South Church Street
West Chester, PA 19382-USA
+1 888-228-4655

**Europe**
EfficientIP SAS
90 Boulevard National
92250 La Garenne Colombes-FRANCE
+33 1 75 84 88 98

**Asia**
EfficientIP PTE Ltd
60 Paya Lebar Road #11-47
Paya Lebar Square SINGAPORE 409051
+65 6678 7752