IPv6 Needs Smart IPAM

Be Ready for the New Generation of Network Infrastructures

Highlights

- Design your IPv6-only and IPv4/IPv6 infrastructures, plan transition and anticipate needs

- Deploy your IPv6 resources progressively, safely and avoid downtime

- Enhance security and zero-touch management via automated, error-free, policy-driven IP resource configuration

- Obtain comprehensive, global visibility and control of entire address space across networks

- Manage from a single tool the unified co-existence of IP addressing plans (v4/v6) with DNS/DHCP services

Regional registration agencies long ago announced that they have effectively run out of available IPv4 addresses to offer. Service providers have been assigning IPv6 addresses to companies who have no other choice than to adopt the IPv6 format in their infrastructure. The complexity of IPv6 addresses requires a sophisticated IP address management tool.

With SOLIDserver™, EfficientIP offers a solution fully compliant with IPv6 to help you manage multi-tenant IPv6/v4 addressing plan and DNS/DHCP services in a fully integrated solution, ensuring performance, scalability and high availability of your network.

Why You Need to Start Your Migration to IPv6

Throughout the world, we have effectively run out of IPv4 addresses. Service providers in Europe, for example, now have only IPv6 addresses to assign to companies asking for additional public addresses. Players such as Google and Facebook deliver their content only using IPv6 in certain networks. LinkedIn is switching off IPv4 & deploying IPv6 in 2018 in order to reduce page download times. For your partners, your customers - virtually your whole environment - migration to IPv6 is becoming compulsory.

To prevent compatibility issues between IPv4 and IPv6 technologies, it is now critical to migrate your infrastructure in line with IPv6 requirements.

Being IPv6 ready means:

- Ensuring your company remains competitive
- Preserving communications with your customers and partners
- Staying visible to the marketplace via an IPv6-compliant website
- Guaranteeing your company is prepared to support future growth and development

Migrating from IPv4 to IPv6 is a long and costly operation that presents three primary challenges.

First, IPv6 addresses are lengthy. Their format extends to 128 bits and can no longer be managed with a spreadsheet. Configurations and network infrastructure become more complex and thus more error-prone.

Secondly, the IPv4 and IPv6 will need to coexist. Migration to IPv6-only infrastructures will take several years, meaning that for a while your network will use both IPv4 and IPv6 addresses. IPv6 is not backward compatible with IPv4, and IPv4 and IPv6 are not interoperable. You will need to conduct an accurate inventory of your network infrastructure of all IPv4 address allocations and related DNS and DHCP services to prepare and plan IPv6 Transition.

Third, deploying public Internet services that support IPv6 is a major short-term project, implying to upgrade Internet connectivity, WAN routers, security systems and DNS services. Three architectural approaches can be considered to undertake this strategic project:

1. Deploy IPv6 to IPv4 Gateway
2. Deploy a dual stack Internet DMZ infrastructure
3. Deploy a dedicated and separated IPv6 DMZ

All 3 options require deploying and managing at minimum IPv6 addressing plan and DNSv6 services.

IPv6 Infrastructure Design – IPv6 Planning

The IP addressing plan is the foundation of the network upon which DNS and DHCP services are organized and deployed. The IP addressing structure can be defined according to one or several criteria which can be technical, administrative or organizational for example. As a consequence one of the fundamental requirements for an efficient IPAM solution is to ensure the possibility to model existing and future IP plan organizations according to your needs and criteria.

Flexibility and Scalability:

SOLIDserver™ enables you to model your IPv4/IPv6 addressing plan precisely and easily, according to multiple criteria. It is possible to mix and match models to construct a tailor-made address structure for your company. There is no limitation on the number of levels and depth that can defined in the IP plan. All branches of this customized tree structure can be independent or dependent, making it fast and easy to design and manage VLSM subnets (Variable length Subnet Masking). The flexibility of hierarchical tree structures makes modifications straightforward. It is possible to reorganize, extend, and migrate IP addressing plans according to the evolution of your enterprise.

Engineering Rules Applied on the IP Addressing Plan:

Hierarchical IP structures enable you to define specific properties, attributes and constraints to be applied on resources and objects, such as name and size, for each level of the IP addressing plan. The resources' properties can be inherited from a level to a sub-level, to be included in a hierarchical organization of engineering rules mapped on the hierarchical IP plan structure. This unique and unequalled approach allows you to adapt your IPAM tool not only to your specific IP plan structure but also to your engineering rules of resources deployment, applied to each level of your IP plan.

The new IPv6 infrastructure model can be fully programmed into the SOLIDserver™ interface and tested in real conditions. Therefore prior to integration of the new IPv6 addresses, you can anticipate needs, plan future connections between IPv4 and IPv6 addresses and develop an efficient deployment plan. When you are ready to migrate to IPv6, you will be able to monitor each step of the deployment, manage task delegation and establish regular and strategic reporting.

Unified Management of IPv4/v6 and VLAN Plans with DHCP–DNS Services

SOLIDserver™ is a unified management solution that enables you to manage and deploy IP addressing plans (v4/v6) and VLANs with DNS and DHCP services from a single tool and in one operation.

All configurations will be automatically carried out by centralized management SOLIDserver™ appliance on remote defined DNS and DHCP servers and will configure DNS and DHCP services according to specified options. The SOLIDserver™ GUI displays all information in a single view for immediate access. DNS, DHCP and IP plan data are easily consolidated.

Similarly, the manual allocation or deletion of an IP address in the subnet will automatically update DNS service configurations by creating or deleting A, AAAA, PTR and CNAME records on the appropriate DNS server(s).

SOLIDserver™ ensures dynamic and integrated management of IPAM with DNS and DHCP services in a single process, ensuring the highest level of quality and Efficiency.

Global Visibility for Global Management

SOLIDserver™ stores all information concerning the overall IPv4/v6 address and VLAN plans (IP addresses, IP pools, subnets) as well as multivendor DNSv4/v6 and DHCPv4/v6 server configurations in a centralized repository. It provides a single, comprehensive and real-time view of the entire address space deployed over multiple networks, and with address pools and DNS information deployed on multiple DHCP and DNS servers throughout the network. IPv6 Prefix Delegation Observability is available if delegation is in place.

SOLIDserver™ enables comprehensive access to data across an overall network at a glance, based on user-defined or standard search criteria. Several powerful search engines enable simple or complex searches based on multiple criteria, not only within a server or a subnet but across all data networks. For example, it is possible to identify in just a few seconds all IP addresses allocated to Hewlett Packard servers for which the names start with "sr.x". All assets can be tracked down by IP, hostname, MAC address or user-defined criteria (Ex: vendor, serial number, OS, location, etc.).

This approach ensures the full capability to drill into SOLIDserver™'s embedded database according to user-defined criteria and select the specific information needed for efficient management according to your operational needs. There are no more hierarchical arborescence dependencies preventing browsing of the network branch by branch and server by server.

From there, you can manage your infrastructure through a centralized, web-based interface. It automates and simplifies IPv6 address allocation and subnet management, eliminating the risk of misconfiguration.

SOLIDserver™ IPv6 Key Features

IPv6 management: with SOLIDserver™, you only configure your IPv6 addresses once. The appliance then manages them through a centralized, web-based interface. Through automation it simplifies IPv6 address allocation and subnet management, eliminating the risk of Misconfiguration.

IPv6 network visibility: SOLIDserver™ provides global visibility and control over your infrastructure including IPv6 prefix Delegation Observability, allowing you to organize your IP addressing plan and your architecture according to your specific needs, with the ability to include your own IP management rules.

DNS service management: SOLIDserver™ supports DNS AAAA and PTR (DNAME) records for IPv6 DNS resolution, as well as ip6.int, ip6.arpa domains and DNS64 extension to implement the NAT64/DNS64 translation mechanism. Therefore, it can manage IPv4/IPv6 DNS service. DNSv6 deployment and management are fully integrated within the SmartArchitecture™.

Naming conventions: Integrate your IP resource naming conventions within SOLIDserver™ to apply them according to IP object types, geographical location, services membership or other user-defined criteria.

DHCP services management: SOLIDserver™ supports DHCPv6 implementation (stateless and stateful modes) and is seamlessly integrated to IPv6 plans and DNSv6 services management. EfficientIP's SmartArchitecture automate multiple scopes splitting.

Dual-stack management: Migration to IPv6 will be gradual and IPv4 and IPv6 are not interoperable. Your services and equipment will need to support Dual Stack configurations and ensure connectivity between IPv4 and IPv6 devices to maintain the availability of the services. SOLIDserver™ Device Manager solution delivers a unified view and provisioning of IPv4-IPv6 addresses allocated to network interfaces and devices to control dual-stack deployment. Device Manager is fully integrated to SOLIDserver DDI appliances, bringing an unparalleled ability to manage in a single process the complete chain of IP resource allocation.

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