

OPEN SMART CITY INFRASTRUCTURE AND SERVICES

The traditional approach to network infrastructure is that each service provider builds their own access infrastructure to each customer, whether business or residential. This project demonstrates an SDN/NFV shared infrastructure with on-demand service provider and end-user self-provisioning portals.

SDN PROJECT OVERVIEW

CHALLENGE

To develop an open smart SDN/NFV-driven shared infrastructure and on-demand service portal for management of a unique Smart Community. This open network will securely accommodate numerous service providers and provide a platform for on-demand innovative smart city services.

The traditional approach to network deployment is that each service provider builds its own access infrastructure for each client, whether business or residential.

These closed, proprietary networks result in:

- Duplication of infrastructure from each Service Provider/ISP
- Complex physical networks with no service level assurance
- No integration or automation of network, compute, and storage infrastructure
- Static physical networks with no elastic scale requiring 12-24 months to enable new services
- Duplication and operational complexity leading to higher costs which are then passed on to end-users

SOLUTION - SMART CITIES NEED SMART NETWORKS

This project demonstrates a complete end-to-end Smart network infrastructure with a converged ODL controlled multi-tenant network, able to manage numerous service providers that are dynamically operated by a single administrator, "infrastructure as a service". Through "Virtual Network Slicing", multiple service providers can independently operate and manage their "Network Slice" using a "Service Provider Provisioning Portal". In addition, Smart City tenants can utilize an "end-user self-provisioning portal" to request and obtain on-demand innovative Smart City services with subscriber and application aware policy enforcement.

Company	Device/Network
	PurePlay OpenDaylight, Infrastructure Controller, Whitebox Switch
	Hosted in CENG N Data Centre -Smart City Services -Juniper and Inocybe Infrastructure Controller
	Contrail, Contrail service orchestration, vSRX/SRX, vMX, SD-WAN, Service Control Gateway (SCG)

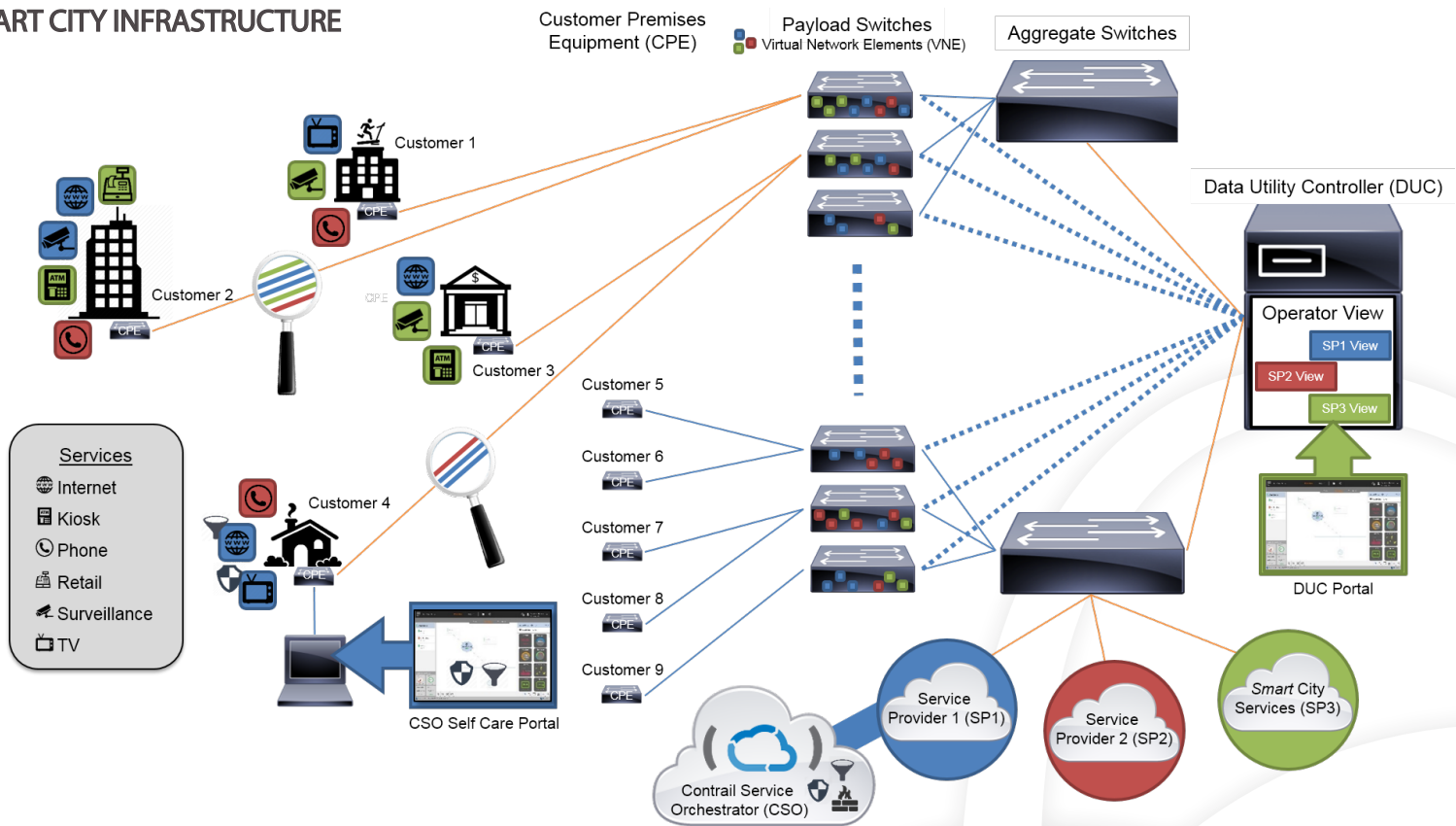
CENG N MEMBERS



PROJECT OVERVIEW

This project leverages the concept of network virtualization by creating independent instances of Network Slices that guarantees isolation from the underlying hardware. The Data Utility Controller (DUC) creates and manages the network slices and provides a dedicated portal for each of the Service Providers to manage their slice of the network. In addition, the concept of Network Function Virtualization (NFV) and end user control is demonstrated through a cloud-based services platform.

SMART CITY INFRASTRUCTURE



SMART CITY ARCHITECTURE COMPONENTS

- Inocybe Data Utility Controller (DUC): An 'Open' switch server appliance that virtualizes multiple 'payload' switches.
- Payload Switch: Programmable X86-based whitebox switch designed to provide the resource slices called Virtual Network Elements (VNE) dedicated to each service Provider on a shared hardware
- Juniper Contrail Cloud: SDN solution for Cloud and Network Functions Virtualization
- Juniper Contrail Service Orchestrator: Orchestrator for the lifecycle of virtualized network functions – creation, management, deletion etc



CENTRE OF EXCELLENCE
IN NEXT GENERATION
NETWORKS



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