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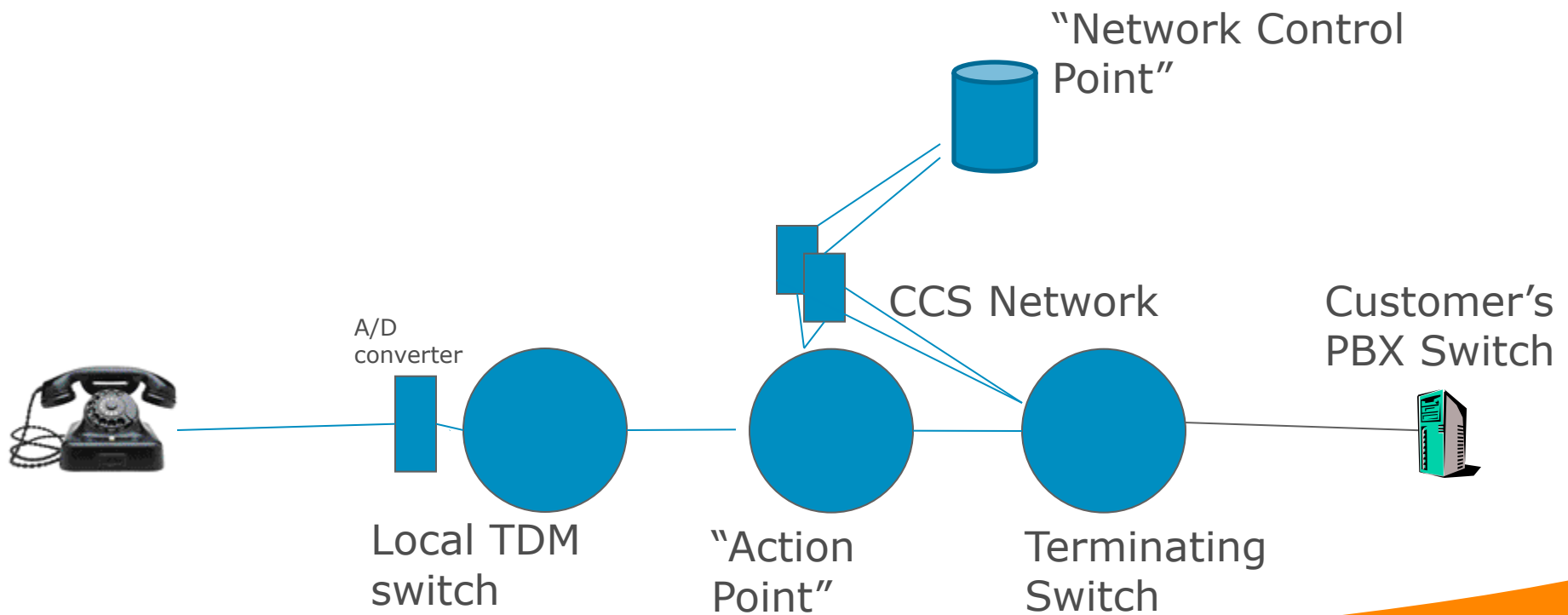
Intelligent Networks

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Intelligent Networks in the 1970s and 80s for voice services.



Initial Intelligent Network Applications

(1975 to 2000)

Flexible routing for 800 numbers

Delivery of calling party number

(and services based on it)

Collection of digits for refined routing

Creation of virtual networks (Software Defined Networks)

Automation of Calling Card billing

Dynamic nonhierarchical routing

Characteristics of Initial IN Networks

Highly reliable (mostly Time Division Multiplex)

Tied to 64 kbps channels

Optimized for 3khz voice

Separation of control and bearer path insure a secure network

CCS Network provides parameter capacity for service support and distributed call control

Interface for customer to change routing in real time

Transition to Broadband Networks

Flexible bandwidth easier to achieve

Delivery of data, voice and other services over the same infrastructure

Need for wide variety of access types

Requirements of Packet Networks for VoIP and Data Services

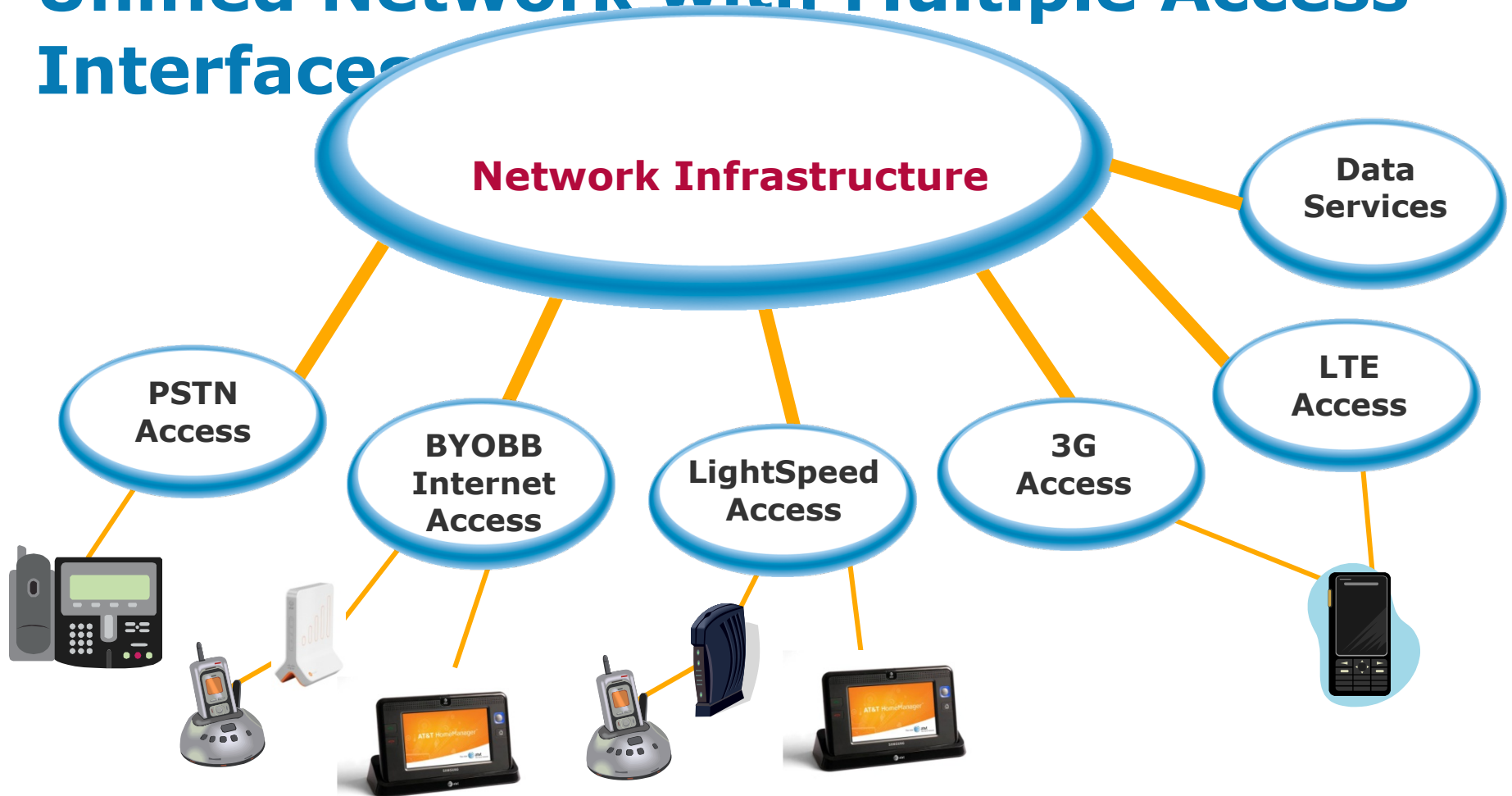
Voice requires low delay

A 64 kbps VoIP call requires about 100 kbps with 20 ms packets

Round trip delays of more than 300ms reduce conversational quality

Data requires low packet loss but is usually not sensitive to short delays.

Unified Network with Multiple Access Interfaces



What is going to be in the Infrastructure Bubble?

OC 48, 192 fiber routes connected by intelligent switches

Capabilities to manage and improve routing

Border Elements to control entry to the network
Intelligent Route Service Control Points
Detection and Prevention of Denial of Service Attacks

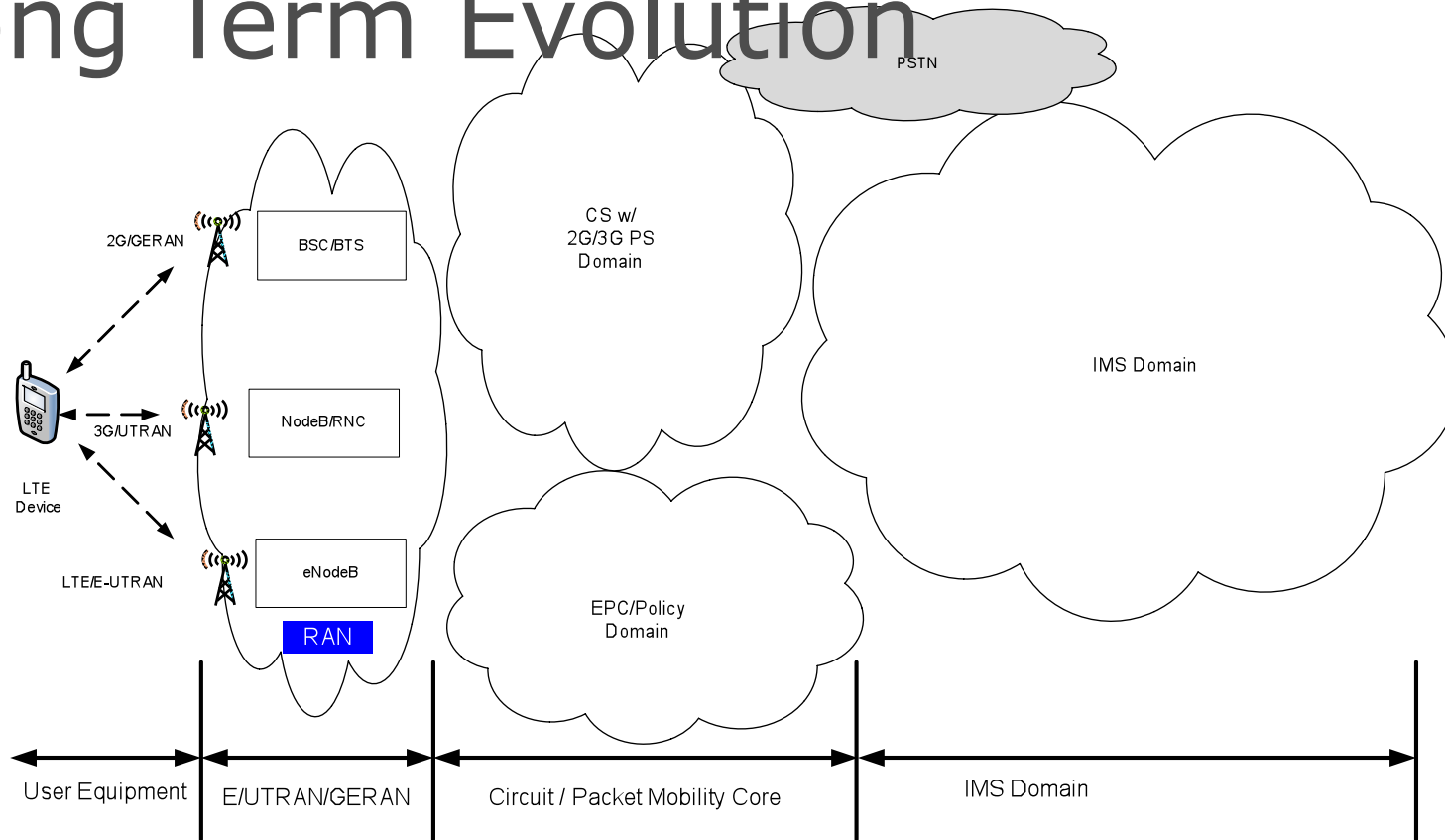
Application servers to support services including directory services, presence routing , conferencing, credit card billing,

Broadband service support for HDTV, HD Voice, Data,

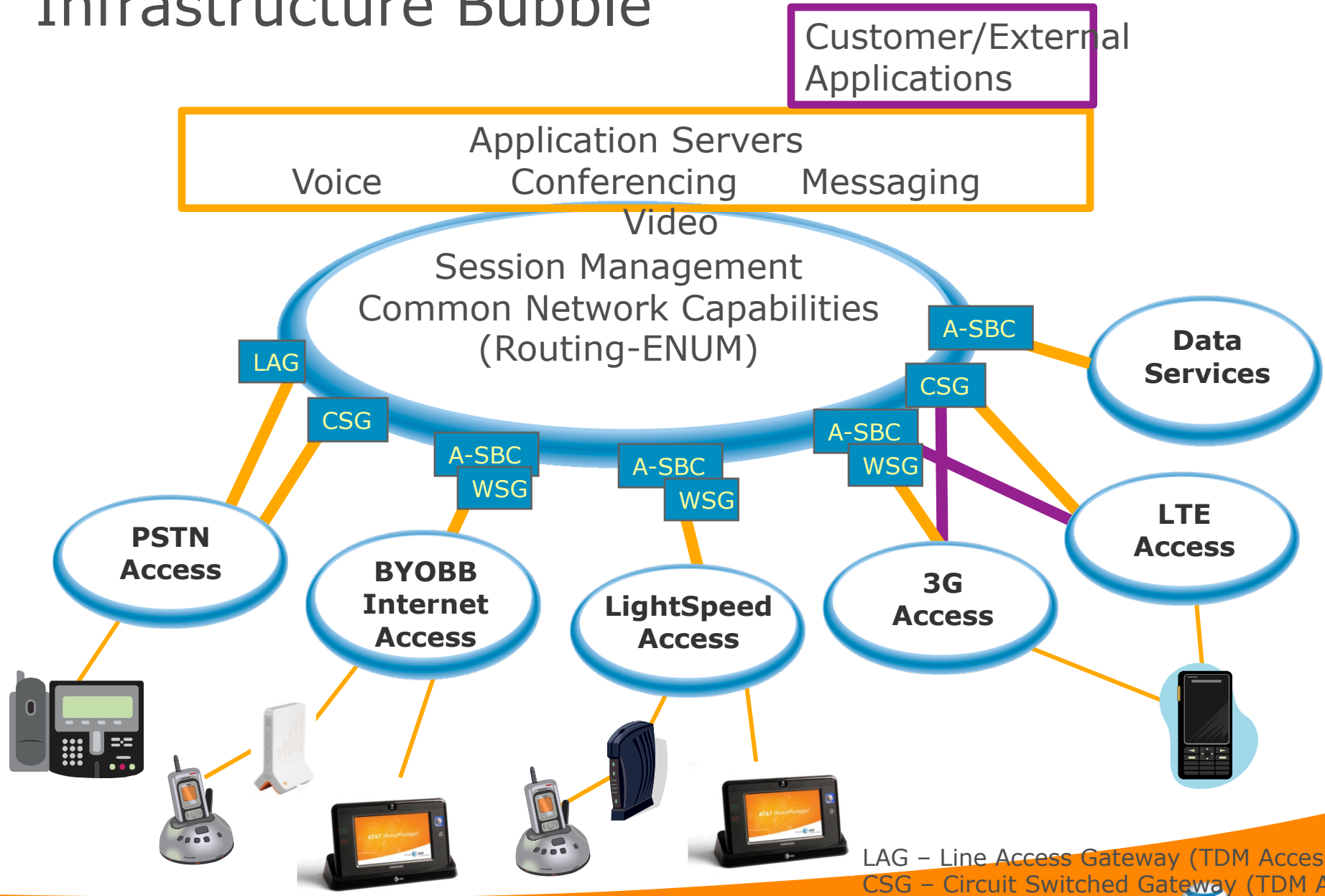
APIs for external developers to use for customer defined services.

LTE Architecture

Long Term Evolution



Infrastructure Bubble

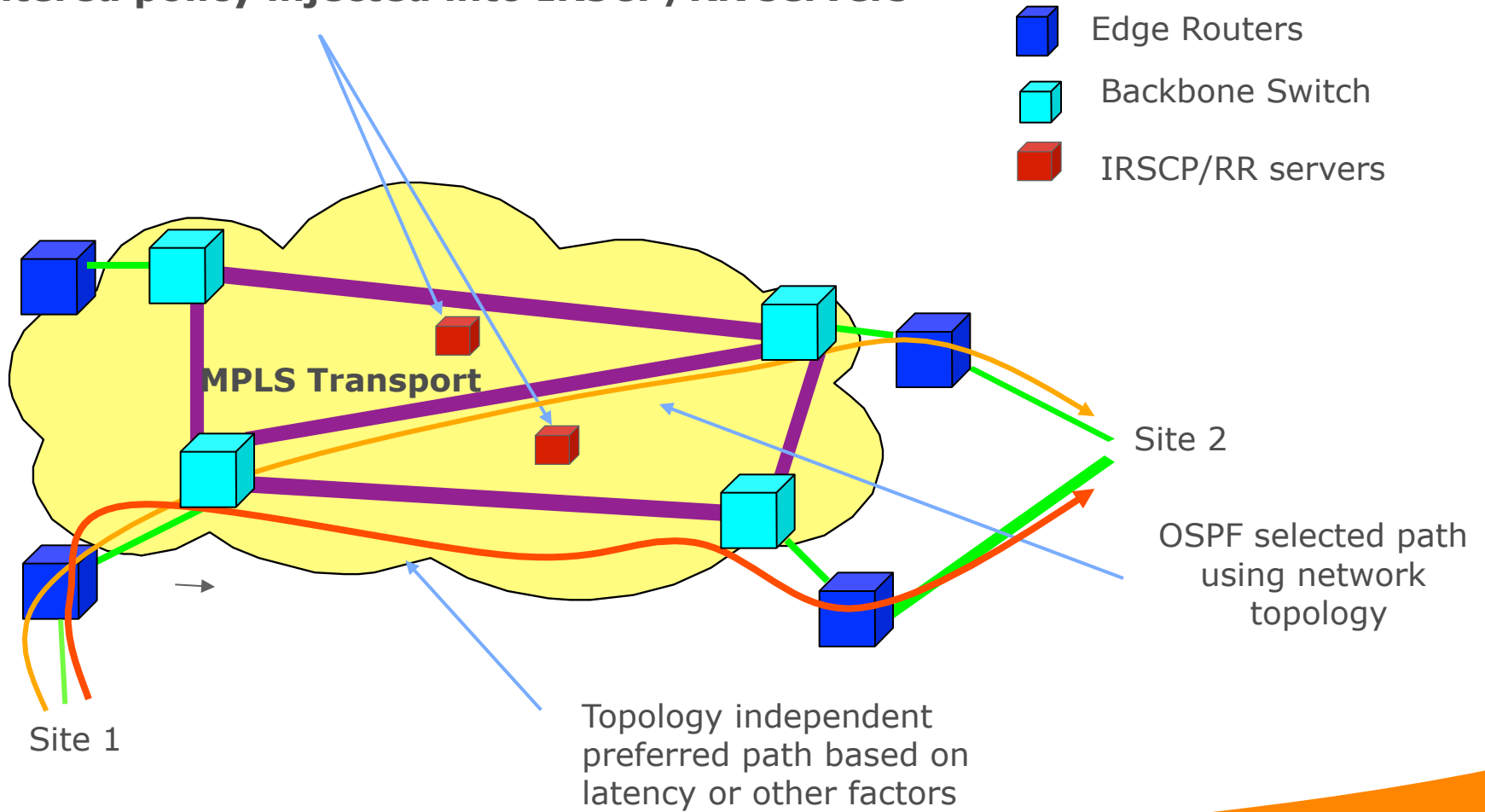


LAG – Line Access Gateway (TDM Access)
 CSG – Circuit Switched Gateway (TDM Access)
 A-SBC – Access Session Border Controller (SIP)
 WSG – Web Security Gateway (Web Access)

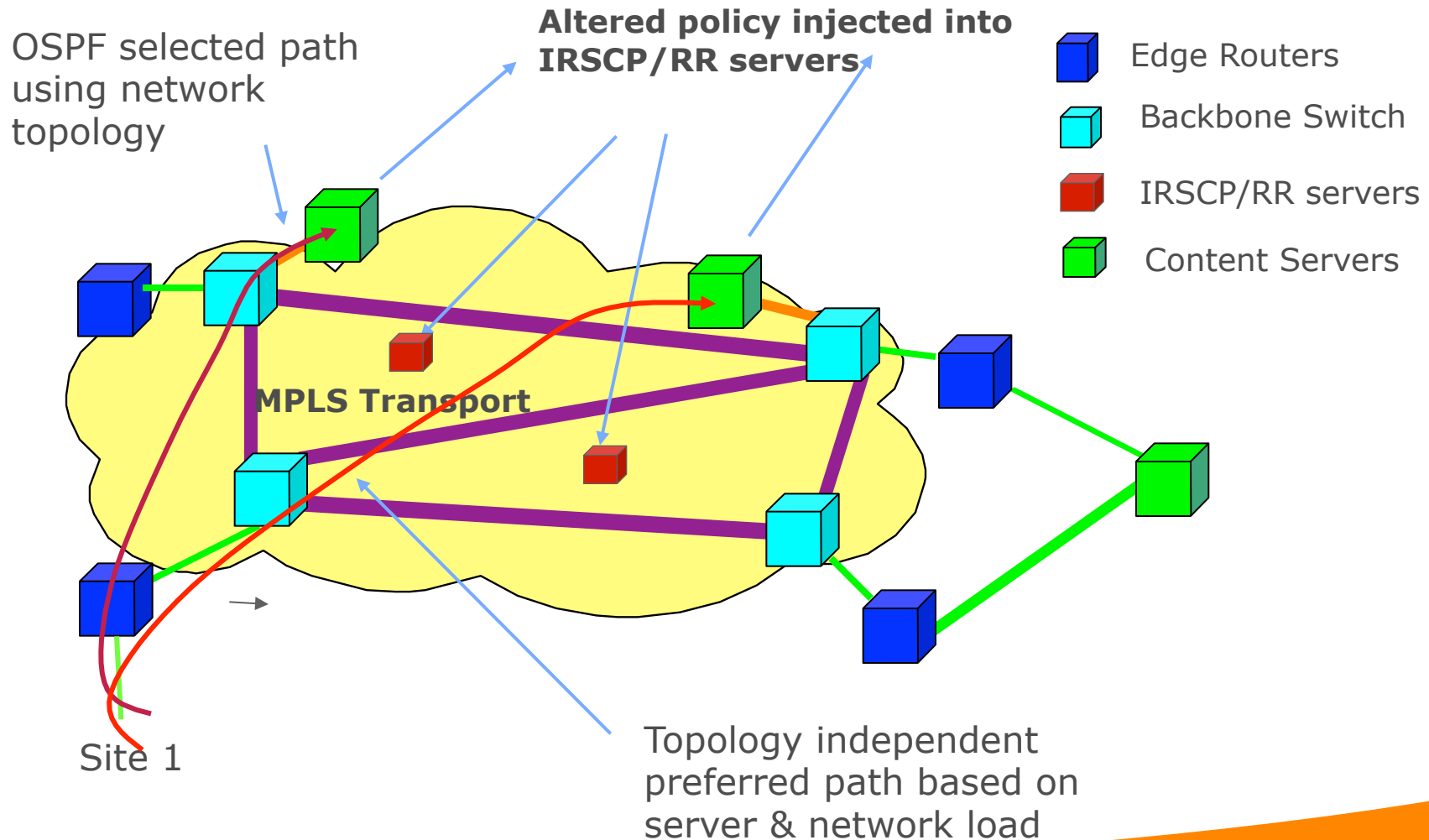


Intelligent Routing Service Control Point (IRSCP) Network Aware – Load Balancing

Altered policy injected into IRSCP/RR servers



Intelligent Routing Service Control Point (IRSCP) Network & Application Aware – Load Balancing



Why must the emerging network continue to be intelligent?

To be able to guarantee the identity of a user

To prevent unauthorized use of the network and denial of service attacks

To provide presence information for use by other services

To guarantee quality of service to meet needs

To identify economical traffic routes under changing demand

To provide data needed for services