

# **Trends in the Evolution of Intelligent Networks**

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# The Importance of Intelligent Networks

- Enhanced call services are gaining popularity
  - Pre-paid
  - Voice activated dialling
  - Unified messaging
  - Voice Access to Web content
- IN-based solutions help Operators meet requirements in competitive markets
  - Time-to-market
  - Early return of investments
  - Service differentiation

## Summary

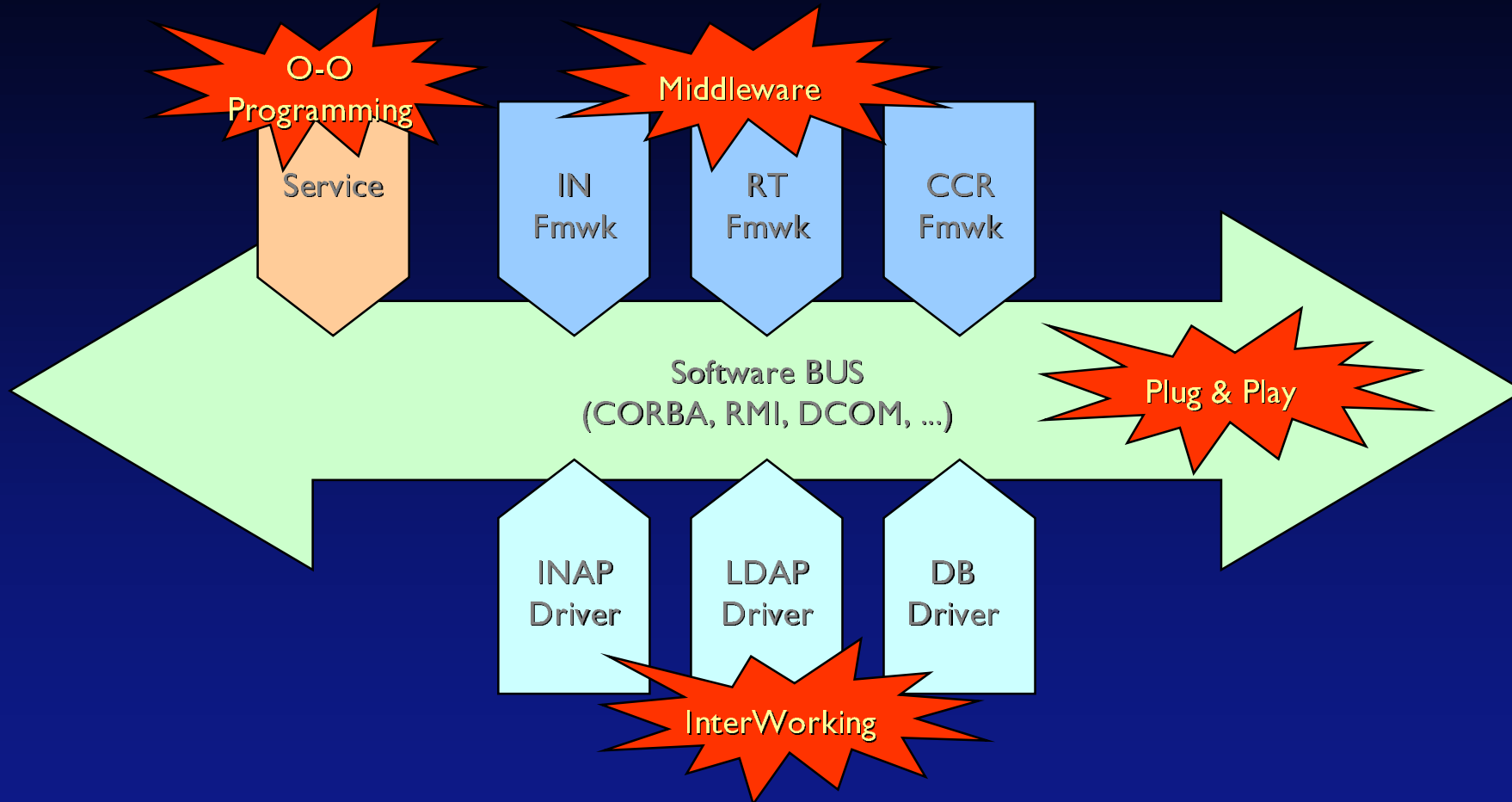
- **Service Engineering**  
*Component-Based Software Architectures*  
*Open Service Markets*
- **Network Architecture**  
*Packet Switching Networks*  
*Convergence with VoIP*  
*Convergence with H.323*

# IN Service Engineering - Current Limitations

- Visual programming with proprietary languages
- Limited software reusability
- Non-portable services
- Can't use middleware
- Maintenance costs are high



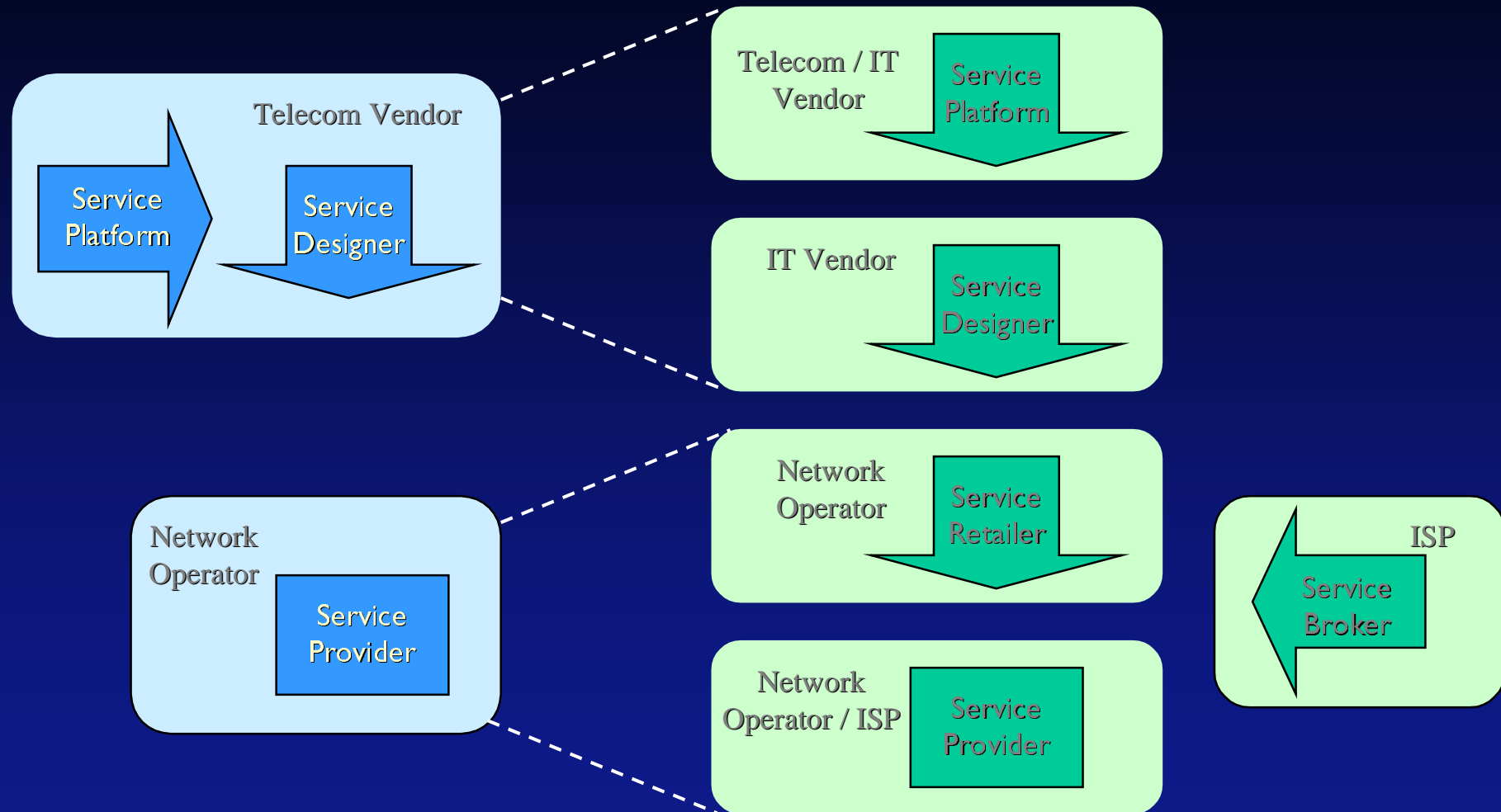
# Component - Based Architectures



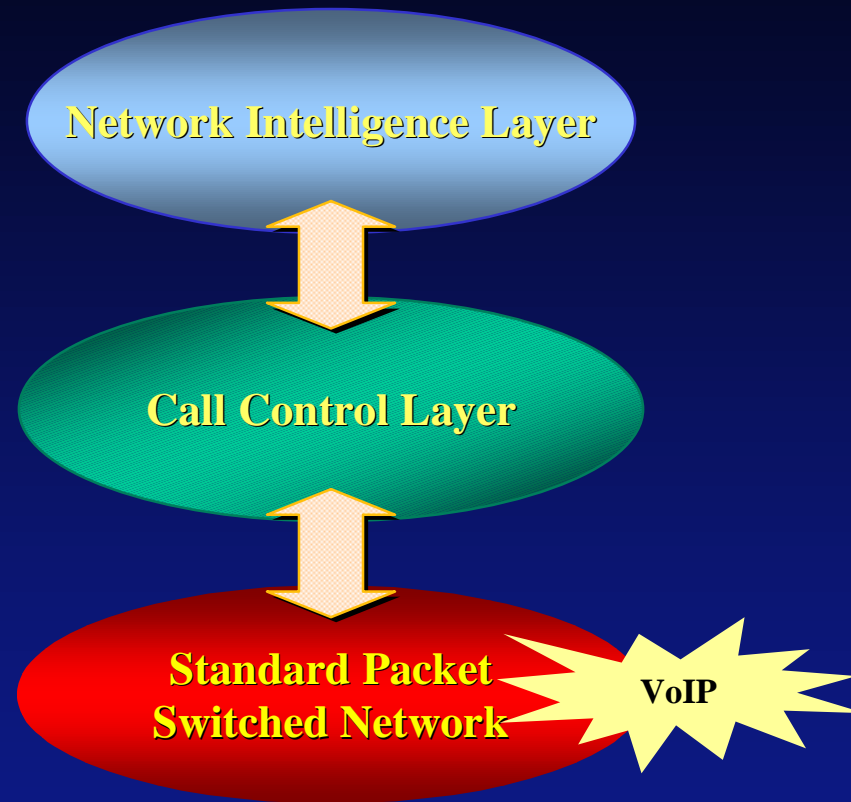
# IN Service Framework

- Framework defines collections of IN domain specific classes
  - Call and Connection Views
  - Event Handlers
  - User Interaction (Announcements, IVR, ...)
  - Toll-Ticketing
  - Service and Subscription Data Management
  - Feature Selection
  - Service Sequencing
  
- Examples
  - JAIN
  - Parlay Group

# Open Service Markets

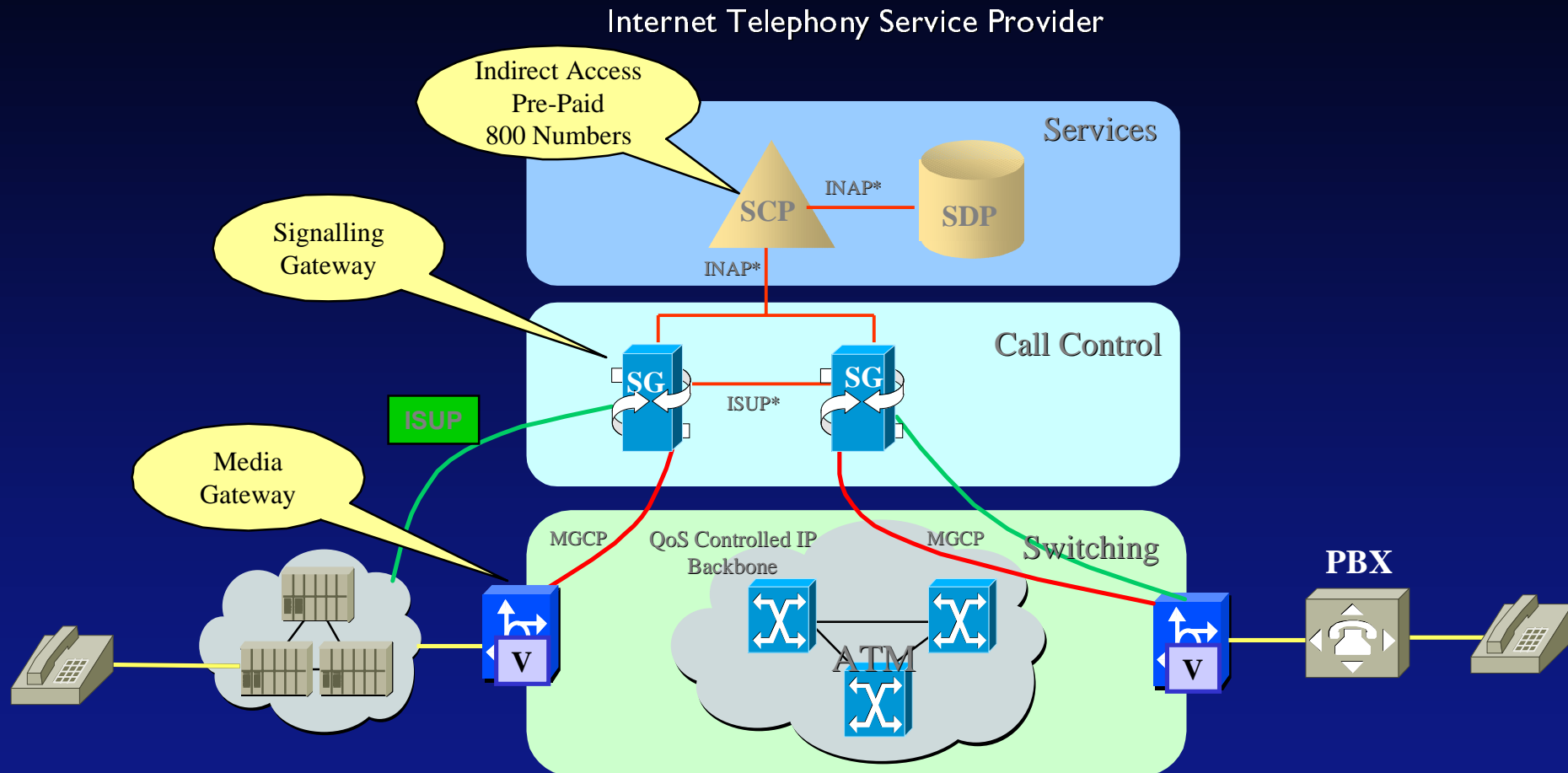


# Network Architecture Evolution



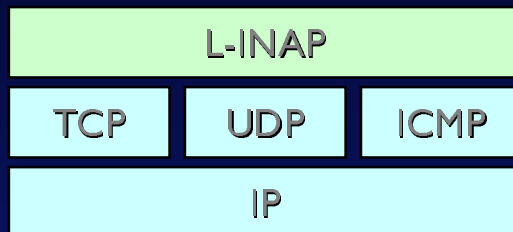


# IN & VoIP Convergence Scenario



# INAP Transport Over IP

L-INAP - Lightweighth INAP



## Features

Message oriented  
IP addressing

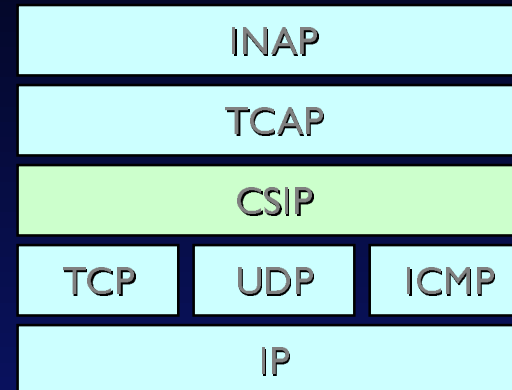
## Benefits

Simple protocol stack  
High performance

## Drawbacks

Interworking with legacy

CSIP - Connectionless SCCP over IP



## Features

Operation oriented  
SS#7 addressing

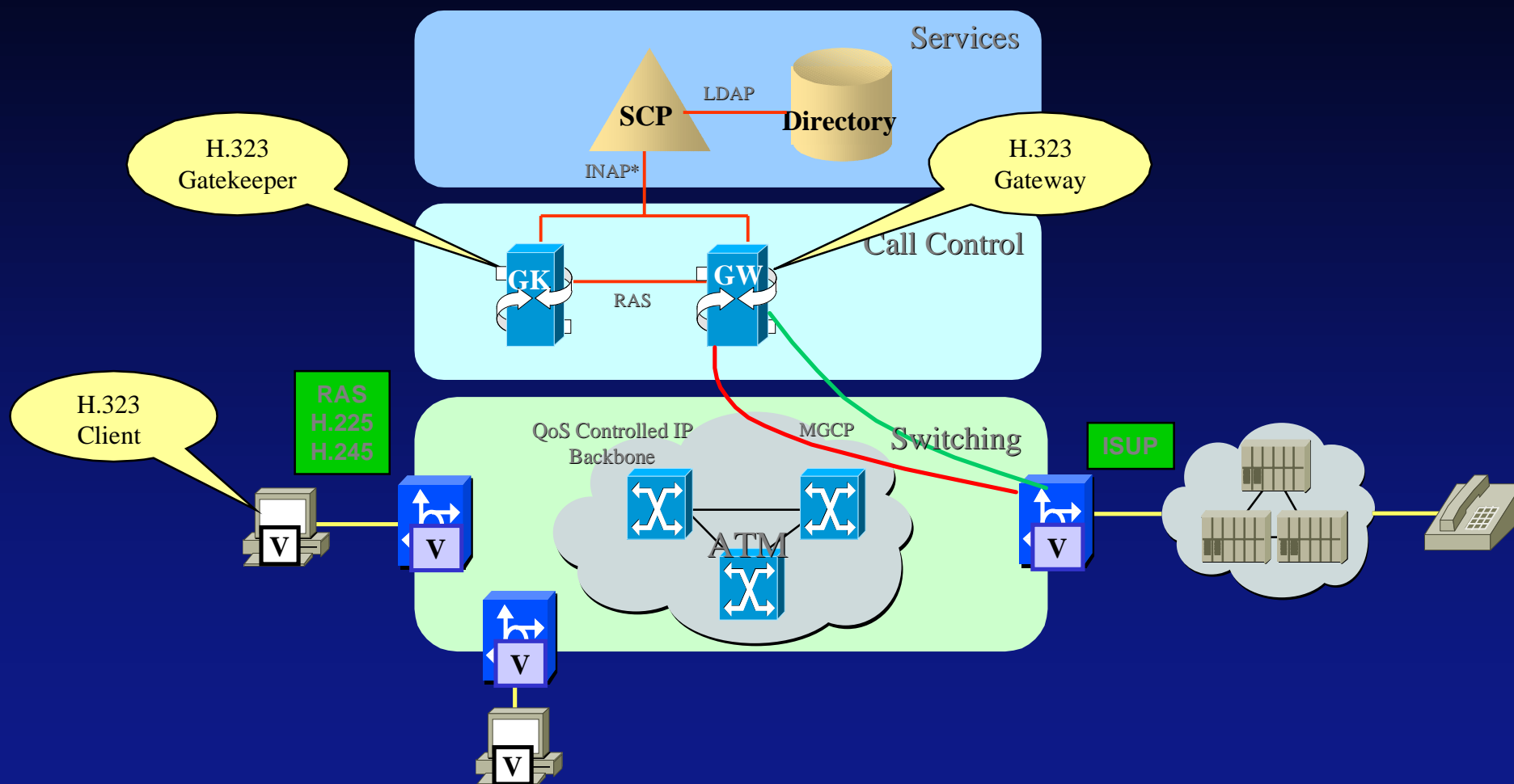
## Benefits

Simple interworking with legacy

## Drawbacks

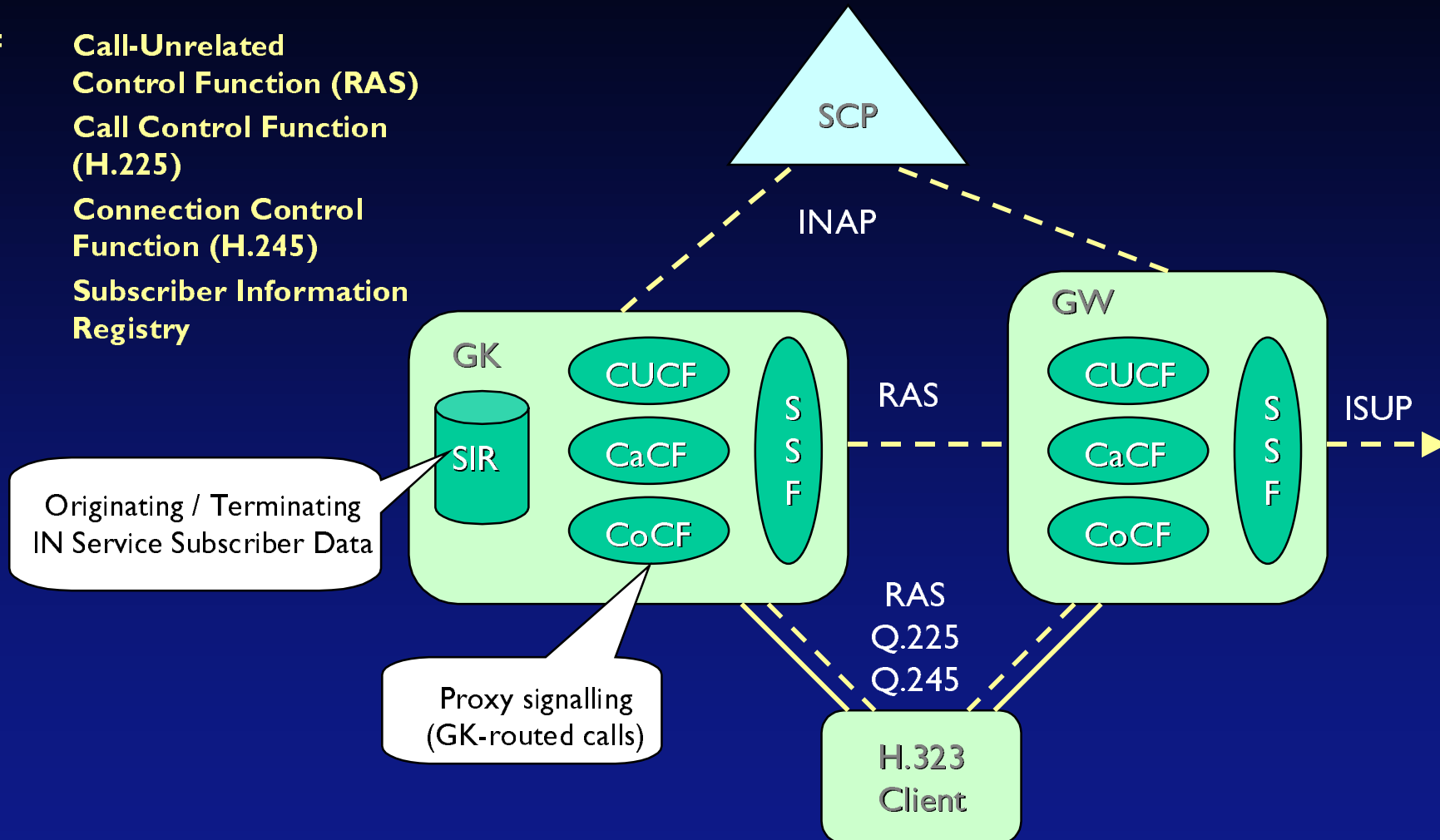
Protocol Complexity  
Redundant functions

# IN & H.323 Convergence Scenario



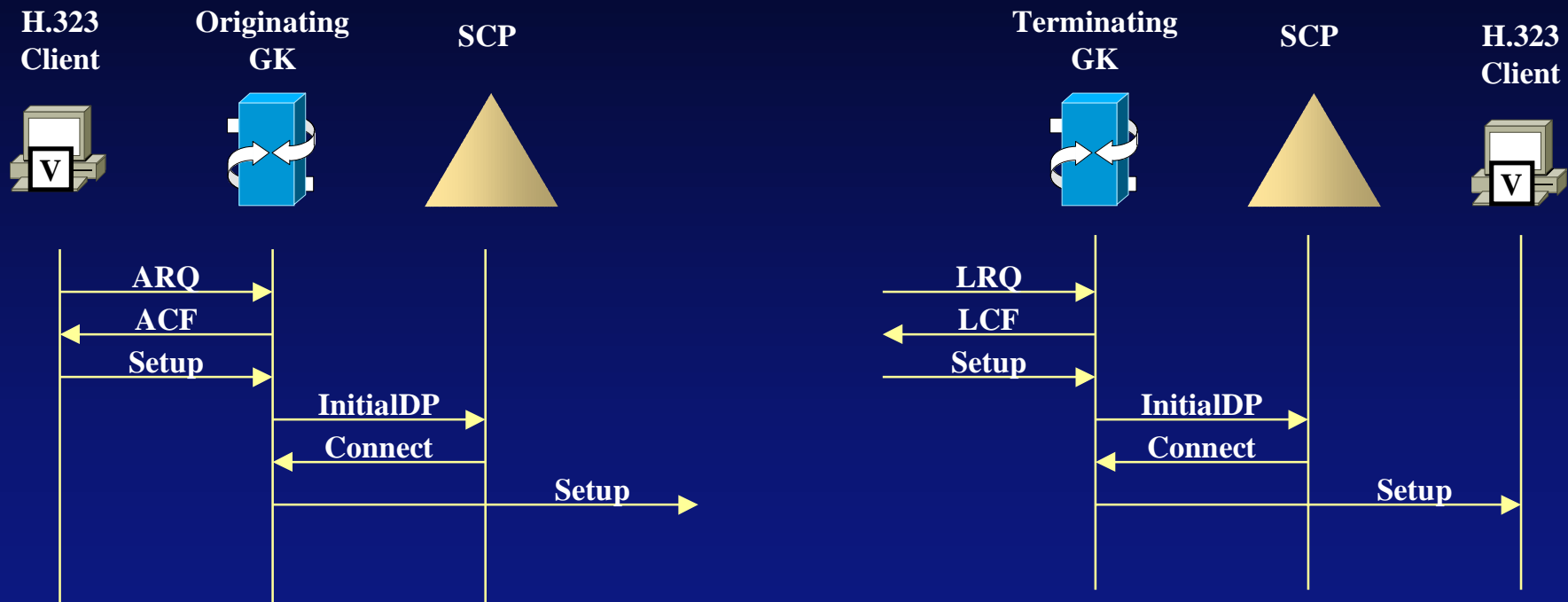
# IN & H.323 - Functional Model

- CUCF** Call-**U**nrelated  
**C**ontrol Function (**RAS**)
- CaCF** Call Control Function  
(**H.225**)
- CoCF** Connection Control  
Function (**H.245**)
- SIR** Subscriber Information  
Registry



# IN & H.323 - Service Activation

## Gatekeeper Routed Call Model



## Directory Services

- **Directory services such as LDAP may be used to access service and subscriber data at the SCP - SDP interface**
  - **Benefits**
    - High performance
    - Ability to share data with Gatekeeper
    - Smooth integration with other network services (e.g. Messaging, PKI, ...)
  - **Drawbacks**
    - Limited data management capabilities
- **Access to customer dependent databases may also be based on LDAP**

## Conclusions

- **Network Intelligence is a key feature enabling today “*Service Driven Networks*”**
- **Better support for modern software engineering practices and component-based software architectures in future IN Service Creation Environments**
- **Convergence with packet switched networks and endorsed VoIP standards (e.g. H.323) is mainly an issue of replacing the SS#7 network while preserving the IN Application Protocol**