

Mobility Management Alternatives for Migration to Mobile Internet Session-Based Services

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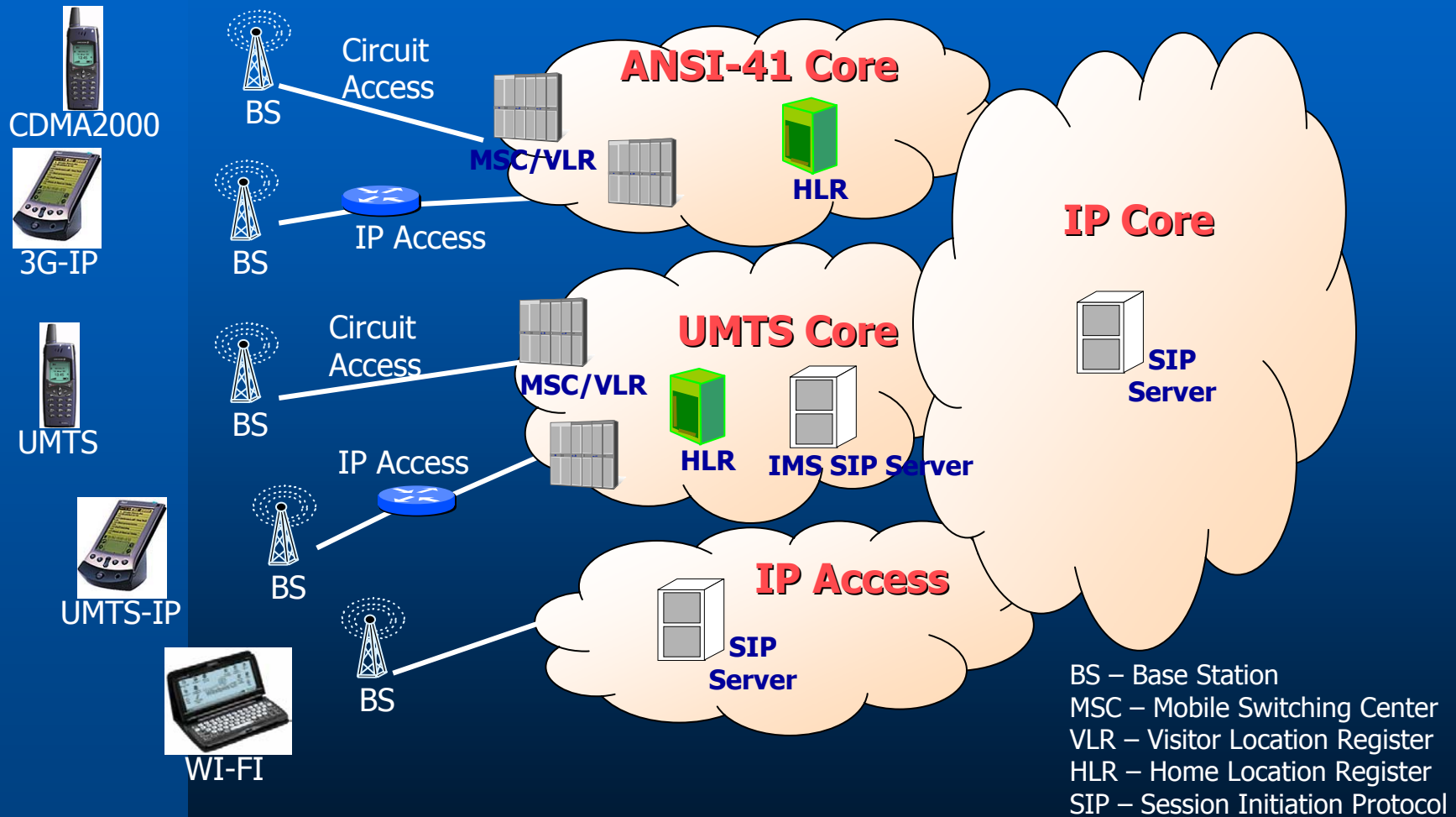
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Future Network Environment



Generic Mobility Management Model

- Major elements of mobility management model

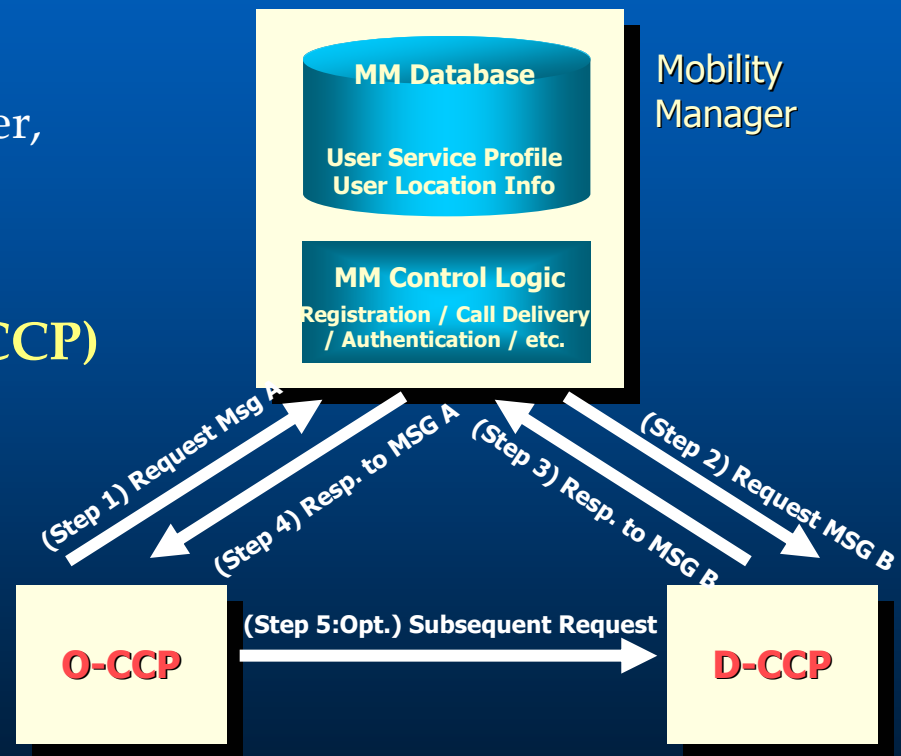
- **Mobility Manager (MM)**

- ANSI-41, UMTS : HLR, AC
- SIP/IP : AAA, SIP location server, SIP registrar, SIP proxy

- **Originating/Destination**

- Call Control Point (O-CCP/D-CCP)**

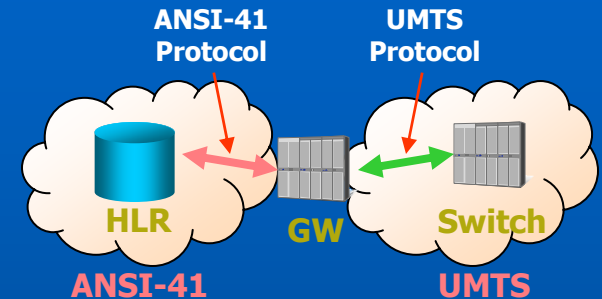
- ANSI-41, UMTS : MSC/VLR, gateway MSC
- SIP/IP : SIP proxy, gateway broker



Approaches for Basic Interworking

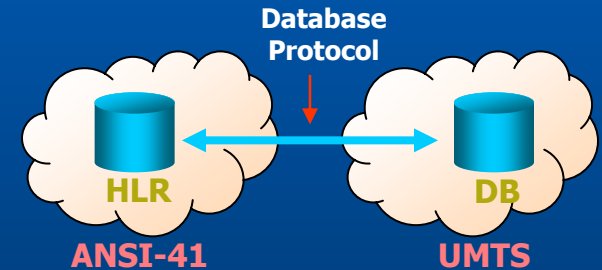
- **Master-Slave Mobility Management**

- Elements translate between networks
- e.g. GSM/ANSI-136 Interoperability Team (GAIT)



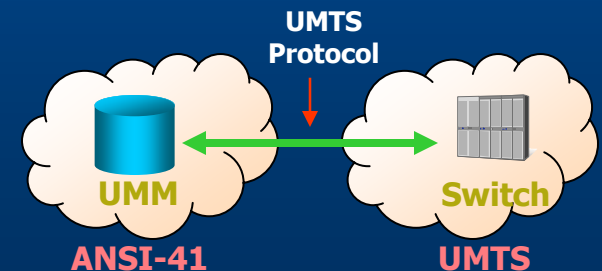
- **Federated Mobility Management**

- Networks directly share data
- e.g. Parlay



- **Unified Mobility Management**

- Single element appears as multiple elements
- e.g. Unified Mobility Manager (UMM)



Unified Mobility Manager (UMM) Architecture

- **Common OPerationS (COPS) interface**

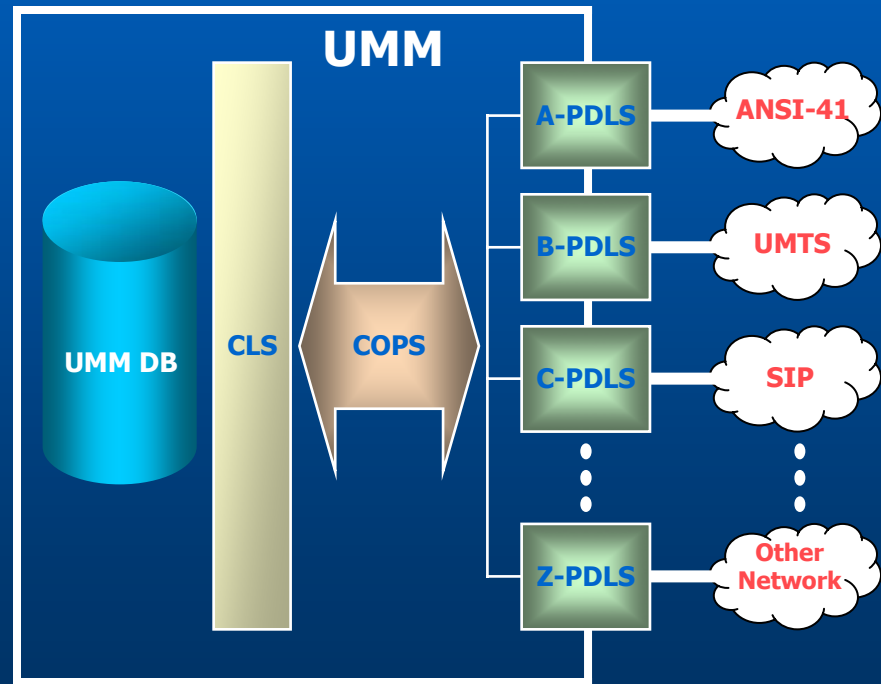
- Embodies the generalized mobility management methods that are common to many mobile networks

- **Core Logic Server (CLS)**

- Provides protocol-independent services
- Determines if interworking is necessary

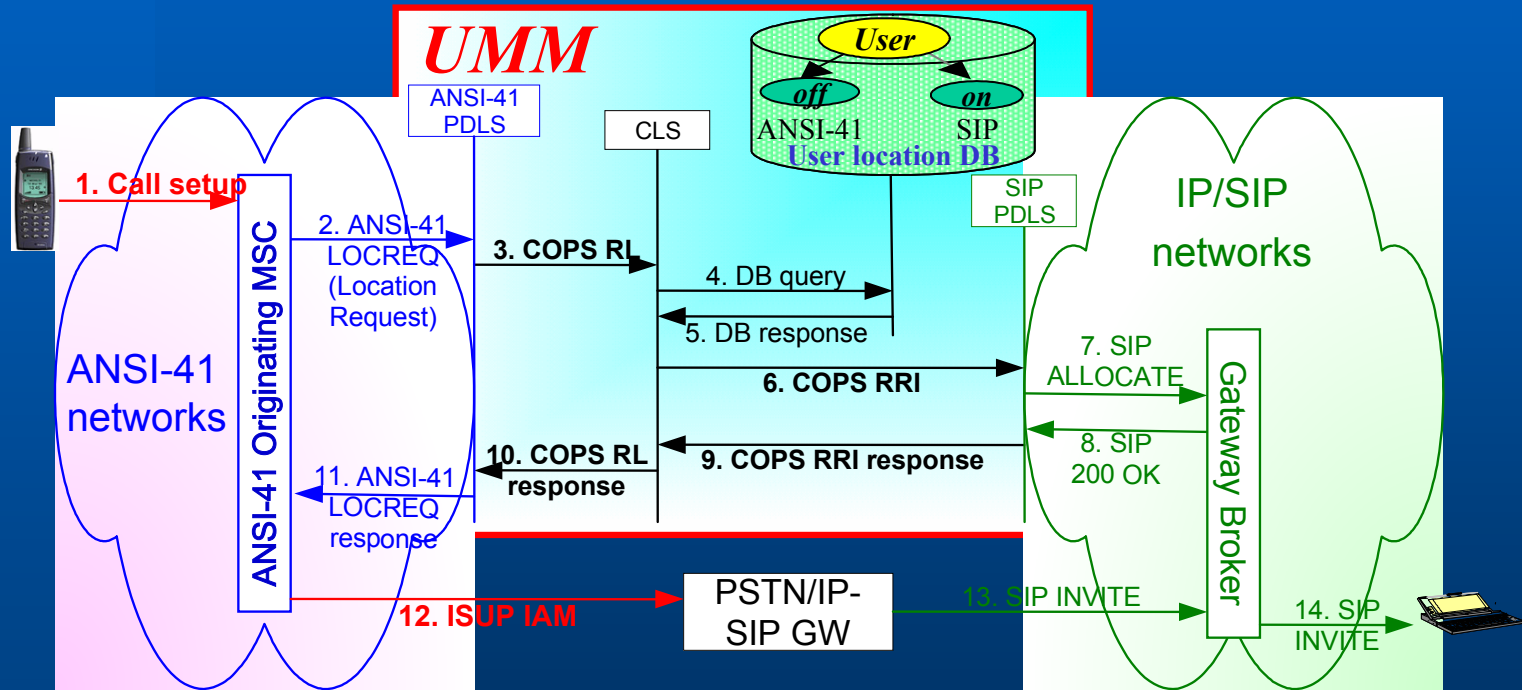
- **Protocol-Dependent Logic Server (PDLS)**

- Terminates the respective protocol interface
- Implements protocol-specific service logic



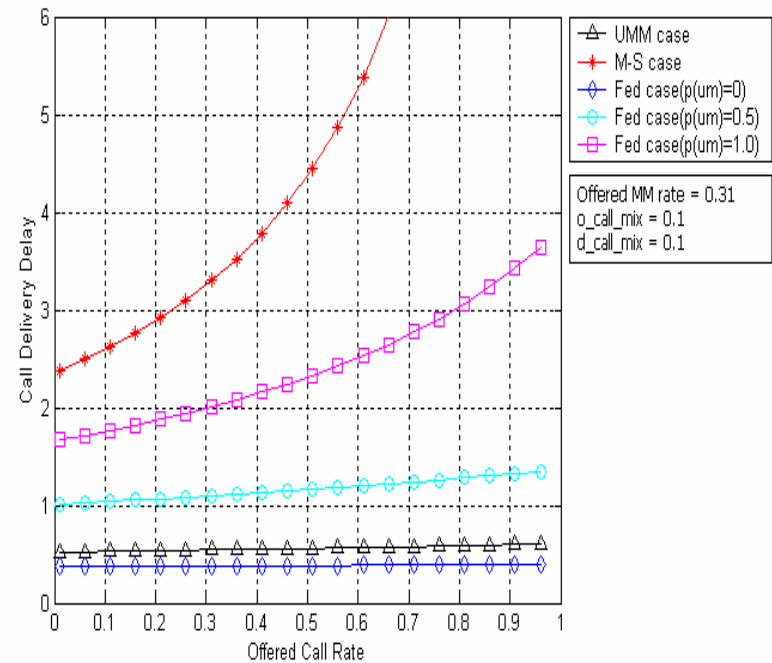
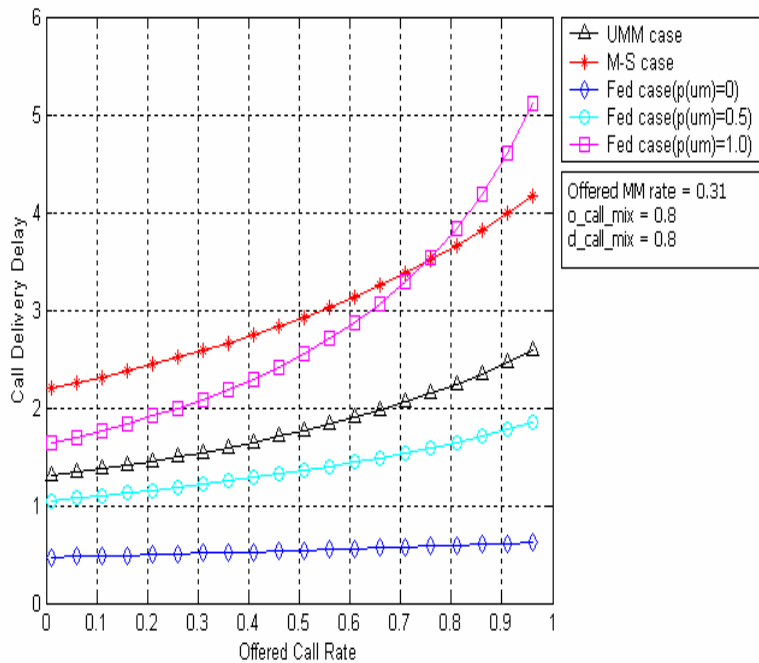
UMM Call Flow Example

- ANSI-41 to SIP



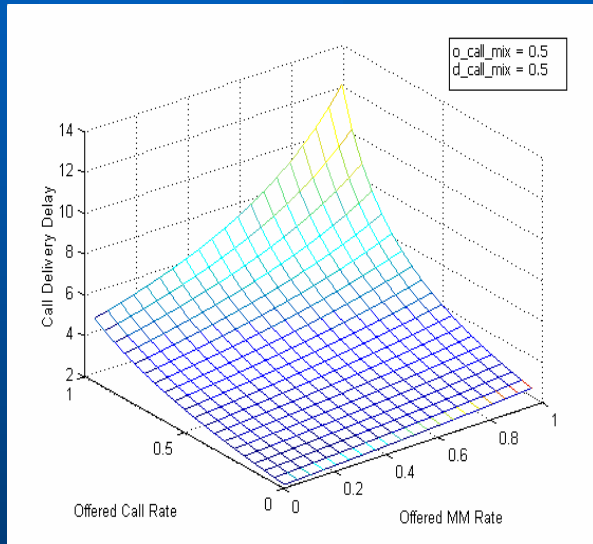
Performance Analysis

- Call Delivery Delay vs. Call Arrival Rate

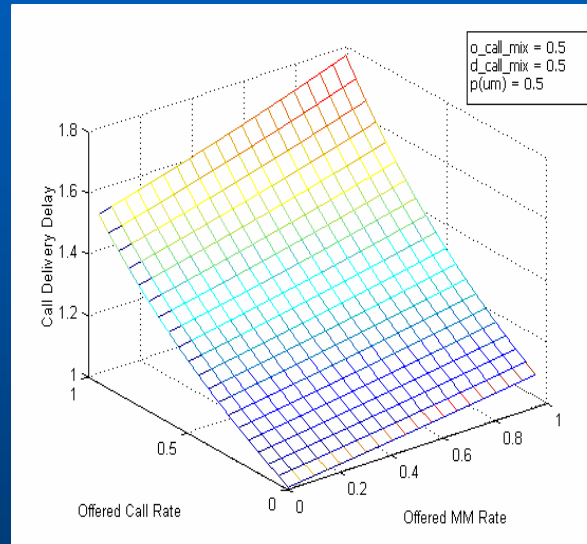


Performance Analysis (cont.)

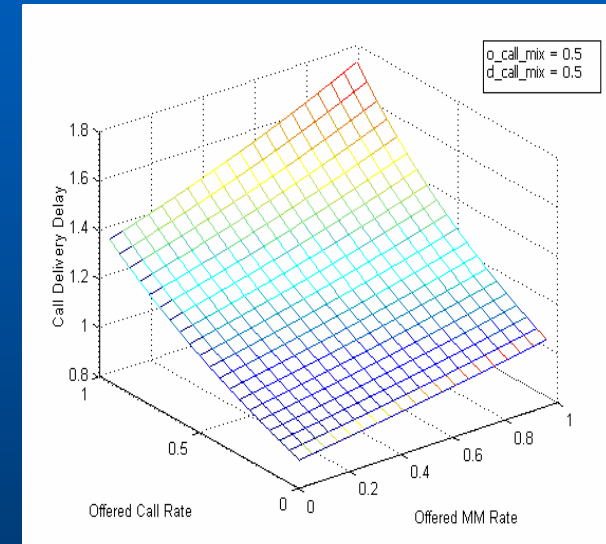
- Call Delivery Delay vs. Call Mobility Ratio



Master-Slave
Approach



Federated
Approach

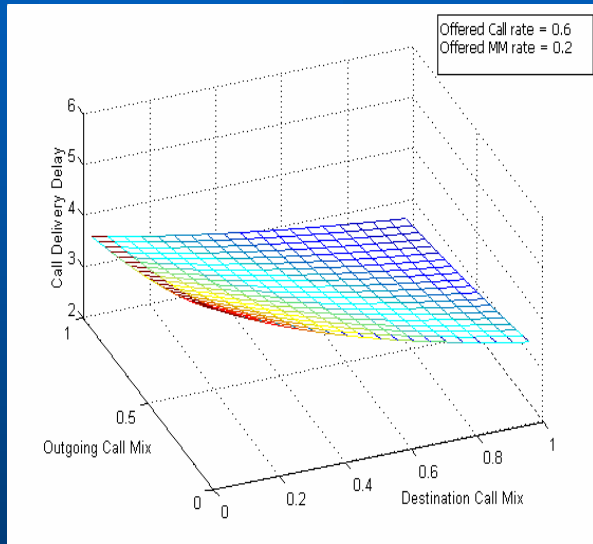


UMM
Approach

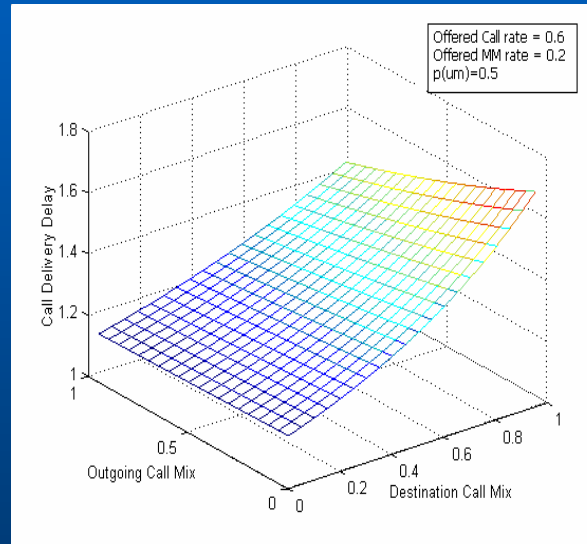


Performance Analysis (cont.)

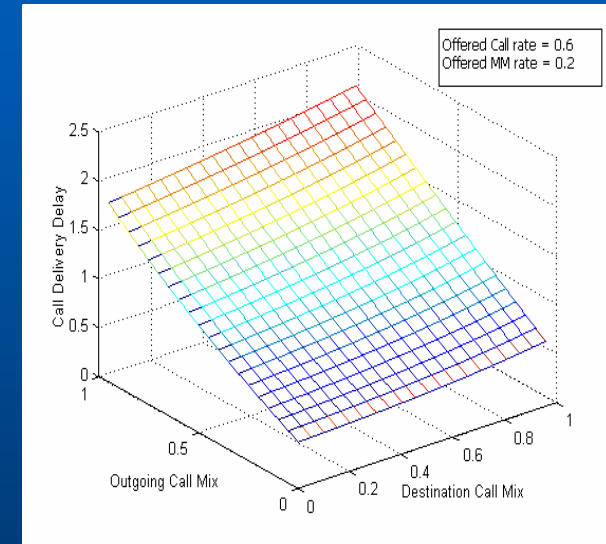
- Call Delivery Delay vs. Call Mix



Master-Slave
Approach



Federated
Approach

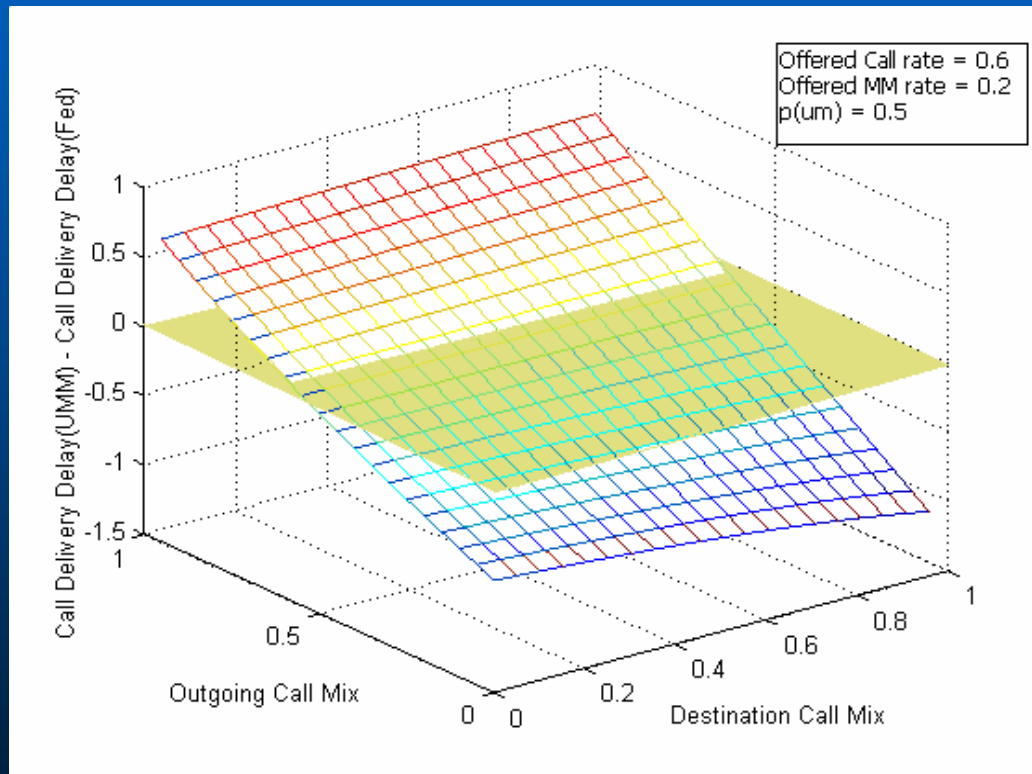


UMM
Approach



Performance Analysis (cont.)

- Comparison of UMM vs. Federated Approach



Conclusion

Master-Slave Mobility Management	Advantage	<ul style="list-style-type: none">• Easy introduction into existing systems
	Drawback	<ul style="list-style-type: none">• Spreading user data over multiple networks• Requiring the use of multiple provisioning systems to support a single user that roams between network types• Poor performance
Federated Mobility Management	Advantage	<ul style="list-style-type: none">• High scalability in term of service• The best performance with a single domain protocol and little data access to deliver a call
	Drawback	<ul style="list-style-type: none">• Requiring secure user data management protocol• Not efficient performance when more data access is required to resolve a user address and to provide interworking function



Conclusion (cont.)

Unified Mobility Management	Advantage	<ul style="list-style-type: none">• Very efficient performance for cases in which interworking and user mobility support, e.g., address resolution, are required• Easier user provisioning• No modification of other elements except UMM
	Drawback	<ul style="list-style-type: none">• Extra overhead when interworking is not required

The unified mobility management approach is highly suitable for supporting the migration to all-IP mobile networks

