Joint Proposal for Numbering for IP-Based Relay Services

DASH carrier services

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Dash Carrier Services

- Founded as Clear Reach Networks in 2002
- Operating VoIP Network Since 2004
- Began Offering Wholesale Origination in 2006 to Voice Service Providers (VSP)
- Acquired Dash911 in 2006
- First Deployed in 2005 - Available Prior to FCC Mandate
- Over 160 Voice Service Providers Customers
- Privately Funded, Cash Flow Positive

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Keys To Moving Forward

- Timeframe
  - Five Milestones
    - Step 1: Central Database Available
    - Step 2: Relay Provider Integration to Central Database
    - Step 3: Relay Provider Endpoint/Network Changes
    - Step 4: Number Sourcing – Done in Parallel With Step 2 and 3
    - Step 5: E911 Solution – Done in Parallel With Step 2 and 3
- Cost
  - Four Elements
    - Direct Database Costs
    - Operational Costs
    - Number Costs – Generally Same Across Proposals
    - E911 Costs – Generally Same Across Proposals
- Industry Support

Dash Open Relay Database (ORD)

- Central Database For Origination Numbers
  - Facilitate implementation of 10-digit NANP number plan in an expeditious manner.
  - Provide a neutral 3rd party mechanism to support direct call routing between relay end-users
  - Standards based solution that securely provides access to relay providers for record updates and queries
  - Flexible solution that address current needs while enabling future capabilities.
  - Ability to address relay provider concerns
  - Support E911 calling

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Dash ORD Benefits

- Flexible Central Database Solution
  - Supports current needs – able to support future requirements
  - Standard based ENUM query
  - SOAP/REST/web based management interfaces
- Independent Of Number Source
  - No requirement on number source to perform updates
  - No waiting for carriers to implement/automate NPAC update
- Available For Immediate Integration
  - Testing API available May 1, 2008
  - Fully automated deployment available June 15, 2008
- Cost Effective
  - Affordable per record per month pricing
  - No per query fees

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Dash ORD Timeframe

- Step 1: Database Available:
  - ORD Available For Integration Testing – May 1, 2008
    - SOAP API available today for integration/testing
    - Allows providers to begin integration work immediately
    - https://staging-service.dashcs.com/dash-api/soap/ordprovisioning/v1?wsdl
  - ORD Available For Call Routing – June 15, 2008
    - SOAP API for automated updates by providers
    - Web interface for manual administration
    - ENUM interface for querying records
    - Available for updates by providers

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Timeframe Parallel Tasks

- Step 2: Database Integration
  - ORD Integration by Relay Providers – 60 to 120 days
    - SOAP Integration to synchronize from provider's existing databases to ORD. Avoids manual processing/delays.
    - Fully Automated (SOA) Integration
- Step 3: Endpoint Changes – 0 days
  - No endpoint changes
  - No additional interoperability requirements between individual providers

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Timeframe Parallel Tasks

- Step 4: Providers Obtain Numbers – 60 to 120 days
  - Any number source – Same as VoIP providers
  - No extra integration work with number source.
- Step 5: E911 Service Deployment – 30 to 60 days
  - Any E911 service provider – Same as VoIP providers

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Timeframe End Result

- **Fully Automated (SOA) Solution** Deployed and Available for Consumer Use **within 90 days of June 15, 2008.** All providers implemented within 120 days of June 15, 2008.
- No Outside Dependencies
  - **Only dependent on Relay Providers and Dash**
  - No Carrier Requirements
  - No waiting on LOA from carriers, No waiting on OSS updates
- **10-digit Numbers and E911 ASAP**

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ORD Comprehensive Costs

- Dash ORD Database Costs
  - $500 per relay provider per month ORD access fee
  - $0.50 per loaded number per month
  - No Query Costs, No Help Desk, No Additional Carrier Costs
- Estimated Number Costs – Depends on Source
  - Volume driven, resellers often more affordable than direct with CLEC or RBOC
  - $0.35 to $0.75 per number per month
  - Per minute costs less than existing toll-free usage
- Estimated E911 Costs – Depends on VPC
  - Less than $1.00 per number per month

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Advantages Over Neustar Proposal

- Timeframe Advantages
- Cost Advantages
- Dependency Advantages

Neustar Timeframe

- Proposal Glosses Over Reality of NPAC
- Step 1: Database Available – 30 to 60 days
  - Dependent on approval of NAPM LLC
  - A NAPM member stated the earliest it could be considered is July
- Step 2a: Relay Provider Integration – Manual – Unknown
  - Requires carrier changes for help desk or LTI access by relay providers
  - Access must be granted by carrier in the form of LOA
  - VoIP providers do not have this access today – outside normal customer behavior
  - Timeframe to obtain an LOA is several months
  - no commitment from carriers to provide LOA
  - Without LOA, relay providers must wait for carriers
    - Carriers must implement policies and procedures to update field
    - Dependent on the carriers interest in small amount of new numbers
  - **Availability – Unknown but months out and outside control of relay providers or Neustar**

Neustar Timeframe

- Step 2b: Relay Provider, Automatic (SOA) – 1+ years to Never
  - Requires telecom carrier implementation of field throughout OSS
  - Requires coordination between carrier and service bureaus
  - Must be approved internally as important to carriers business
  - Carrier development timeframes are typically scheduled out for over a year
  - Relay providers must integrate if carriers even make field available through SOA
  - NeuStar admits carriers may never implement field
- **Availability – More than a year away and likely never**

Neustar Timeframe

- Step 2c: Relay Provider Integrate to NPAC For Queries – 60 to 90 days
- Step 3a: Relay Provider Deploy SBC and Interop – 2 to 6 months
  - Equipment selection required
  - Equipment deployment
  - Interop testing required between all providers
- Step 3b: Providers Update Endpoints – 3 to 6+ months
  - 100K+ endpoints require updates to register with provider
  - Firmware development for equipment providers
  - Operational deployment to endpoints
  - Customer support of upgrade issues

Neustar Timeframe

- Step 4: Number Sourcing – Additional Delays and Limitations
  - Must negotiate additional requirements with Carriers
    - LOA for NPAC Access If Possible
    - OSS Development on Carriers Behalf
  - Limited to working with CLEC or RBOCs – No Resellers
    - Only CLECs can access NPAC
    - Limits options and places additional cost constraints on providers
- Step 5: E911 Solutions – 30 – 60 days
  - Equipment selection required
  - Equipment deployment
  - Interop testing required between all providers

Neustar Timeframe End Result

- Manual updates and required network and endpoint changes likely take over a year from FCC mandate. Automated (SOA) updates unlikely to happen.
- Deployment of 10-digit Numbering and E911 becomes dependent on telecom carriers and outside the control of the relay providers.
- Manual updates to NPAC of 100K plus numbers will be operational headache and will cause consumers delay in obtaining 10-digit numbers and true E911.
- Relay Providers become fully dependent going forward on telecom carriers to implement required changes. Additional costs likely

Neustar Cost

- Neustar Proposal Claims
  - $500 per relay provider access fee.
  - $0.75 to $0.95 insert fee per entry
  - $0.005 per query
  - "Telcos have process changes and may decide to implement SOA updates. NeuStar is unable to estimate the costs for this kind of update, but believe that it is relatively small"

Neustar Cost

- Proposal Ignores True Costs That Will Be Incurred For Database
  - True Costs That Neustar Acknowledges Internally
    - Help desk and carrier pass-through costs will push cost above $15/ year before query costs.
    - **"I note that if AT&T wanted to, they could point out that the Dash proposal is less expensive than the Help Desk by a factor of 2 in the first year if its one TN per $15 (Dash proposed $.50/TN/mo, which is $6/TN/Yr). We're going to charge the small fry $6K per year for SIP-IX on top of that (and I think they proposed something similar)."[1]**
    - Fee incurred with every manual update – every time a relay end-user moves between providers.
  - Additional Costs Incurred Because Of No Automated (SOA)
    - Additional support costs placed upon relay providers
    - Delays/Mistakes caused by human error

1. Email forwarded by Brian Rosen of Neustar to E911 for Relay Providers Yahoo Message Group

Cost Comparison Per Number

	Dash Solution	Neustar Solution
Database Insert	$0.00	$15.00
Database Record	$0.50/month	$0.00
Database Query	$0.00	$0.005
VoIP Numbers	$0.35 to $0.85 estimated	$0.35 to $0.85 plus any carrier fees for updating NPAC
E911	$1.00 estimated	$1.00 estimated
TOTAL per YEAR:	$24.00	$39.00[1]

1. Estimated Query Fees of $0.50 per month based on 100 calls per month

Time Line Comparison

	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09
DASH Solution																			
Central DB Available																			
Relay Provider ORD Integration																			
Relay Provider Network Updates																			
Numbering Sourcing																			
E911 Solution																			
NEUSTAR/NPAC Solution																			
NAPM LLC Approval					??	??													
Database Available																			
Relay Provider Integration (Manual)					??	??	??	??	??	??									
Carrier Integration (Manual)					??	??	??	??	??	??	??								
Relay Provider Integration (SOA)																			
Carrier Integration (SOA)					??	??	??	??	??	??	??	??	??	??	??	??	??		
Relay Provider for NPAC Queries																			
Relay Provider SBC's & Interop																			
Providers Update EndPoints																			
Numbering Sourcing (w/ NPAC Support)																			
E911 Solution																			

Neustar Dependency

- Proposal Ignores Coordination of Multiple Parties
  - Reliance on Telecom Carriers
    - Places timeframe control outside of relay providers
    - Opens FCC to claims by relay providers that delays are outside their control
    - Places 10-digit and E911 deployment at risk
  - Three or More Parties For Database Access
    - Integration with every telecom carrier providing numbers to relay provider
    - Telecom carrier coordination with service bureau and NPAC
    - Relay provider with NPAC database access provider
  - SIP Interop of All Relay Providers Prior To Any Number Deployment

Industry Support

- Dash Solution supported by largest IP Relay provider - GoAmerica.
- Dash Solution only proposal that largest video relay provider, Sorenson clearly stated required no endpoint changes.
- NeuStar proposal has no support from relay providers – only proponent is NeuStar itself.

Conclusion

- Dash Solution Only Proposal That Delivers 10-digit numbers within FCC timeframes
- Industry Controls Timeframes
- Modeled After Existing VoIP Deployments
- **Fully Automated (SOA) Solution** Deployed and Available for Consumer Use **within 90 days of June 15, 2008.**

Appendix 1 – Slides from FCC Summit 3/29/08

Introduction

Our common goal is to drive functional equivalence to relay users by providing standard telephone numbers and E911 access by Dec. 31, 2008. There are a few competing proposals.

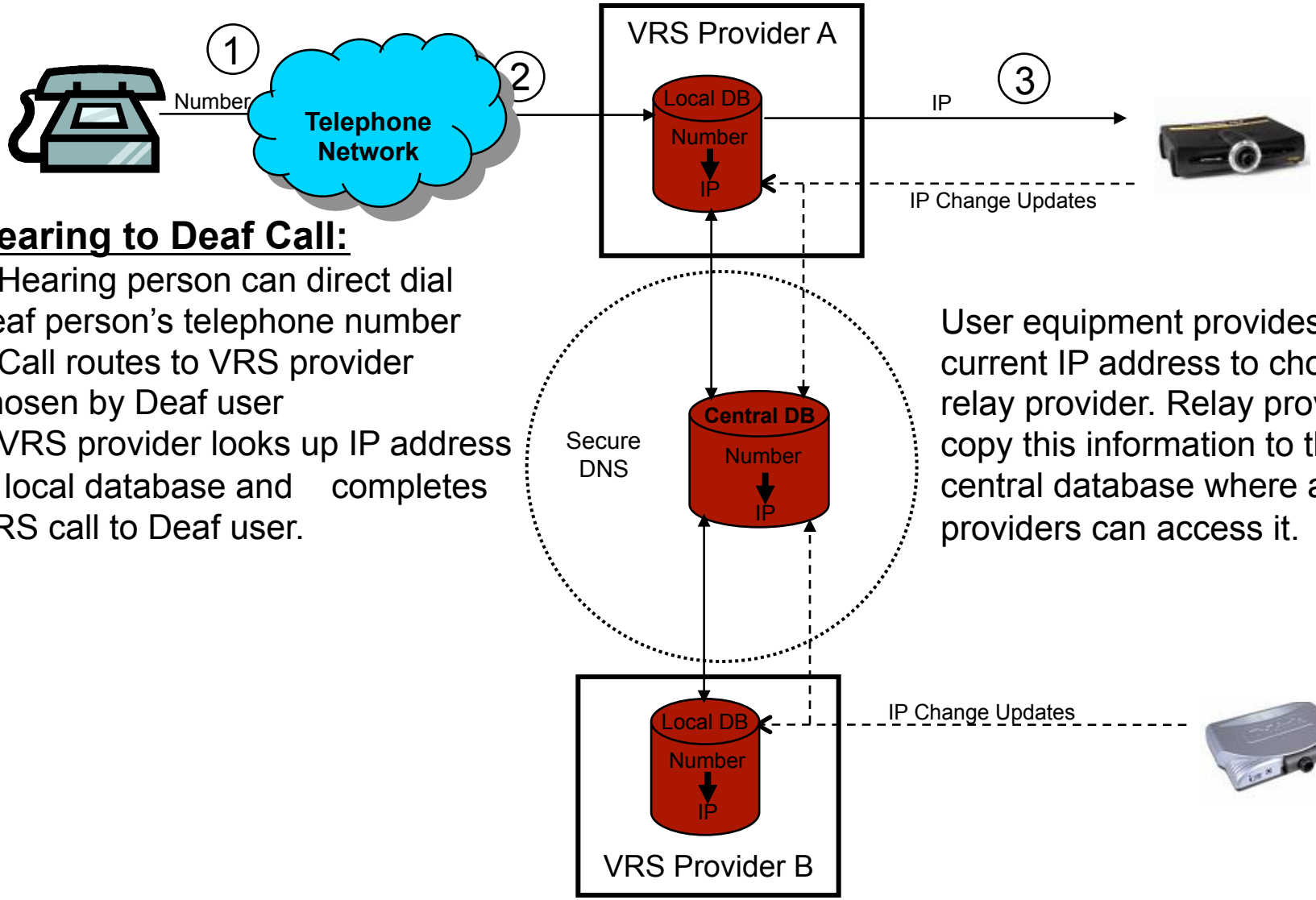
Proposal Similarities:

- Assign regular 10-digit telephone numbers to relay users
- Implement a central database to support routing by any relay provider to any relay user, user-to-user calls, and IP-based relay services
- Leverage the technology deployed for VoIP for E911

Proposal Differences:

- User number acquisition: Relay Providers vs. Neutral Third Party
- Database access: Private vs. Shared vs. Public
- Database Technology: NPAC vs. DNS

Direct Dialed (Hearing to Deaf) Call

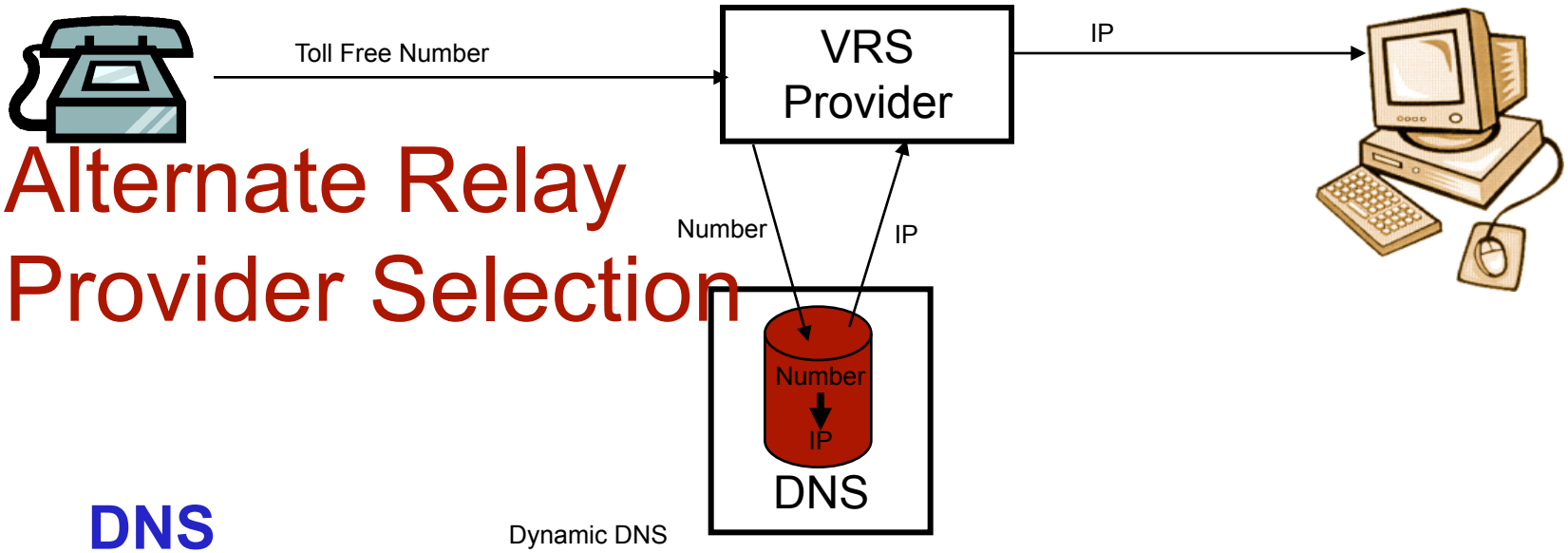


Hearing to Deaf Call:

1.Hearing person can direct dial deaf person's telephone number
2.Call routes to VRS provider chosen by Deaf user
3.VRS provider looks up IP address in local database and completes VRS call to Deaf user.

User equipment provides current IP address to chosen relay provider. Relay providers copy this information to the central database where all providers can access it.

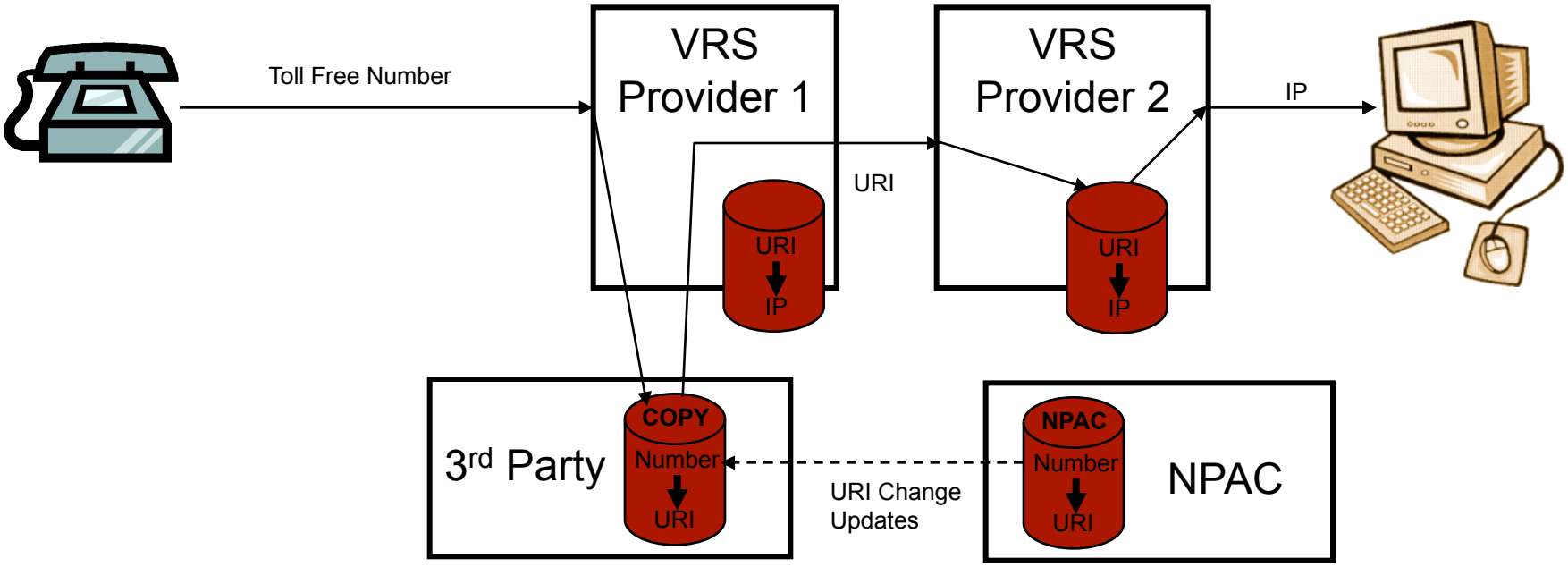
Alternate Relay Provider Selection



DNS

NPAC

Number Portability Administration Center



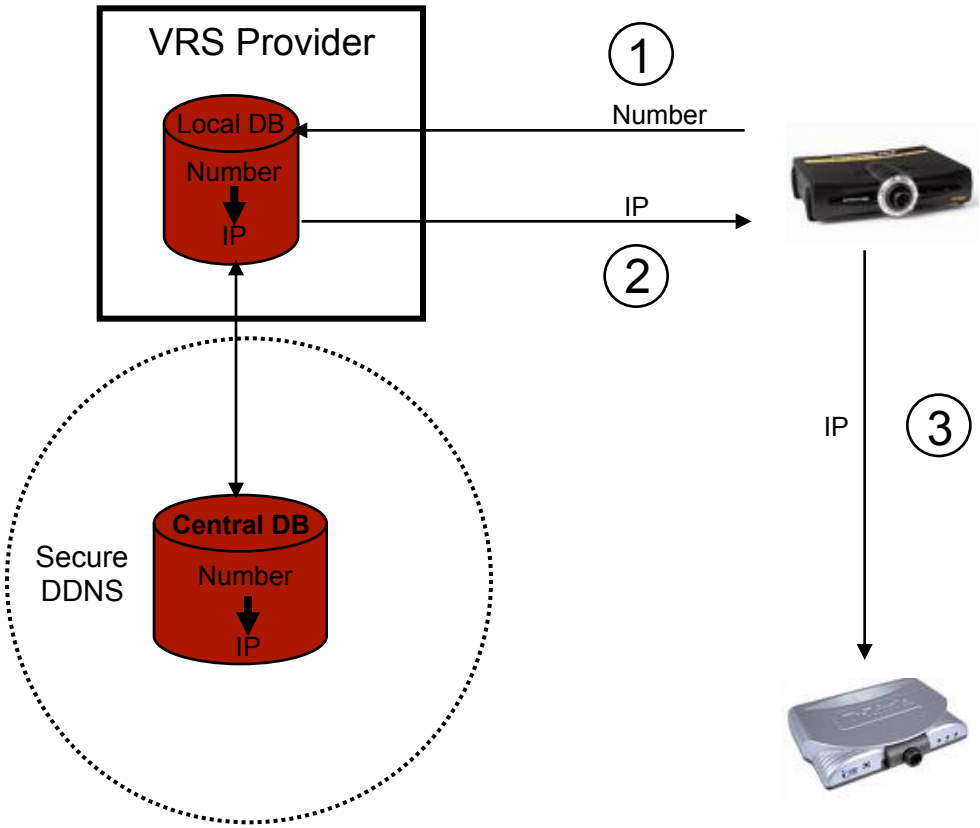
Direct Dialing (Deaf to Deaf)

Deaf to Deaf Call:

1. Deaf user dials 10 digit number of friend (not knowing or caring what device they use).

2. VRS Provider queries database to obtain current IP address of friend and returns to VRS user equipment

3. Direct call established to friend using current IP address.



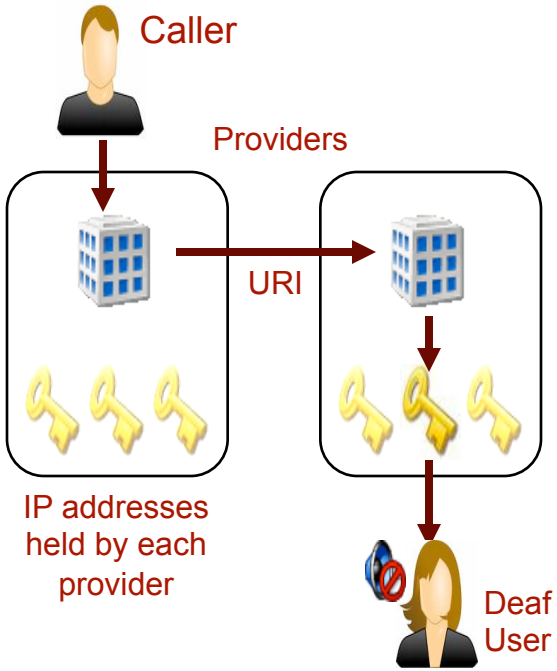
User IP address management for VRS?

IP Addresses are the keys to reaching deaf users

Private

IP addresses held privately by providers

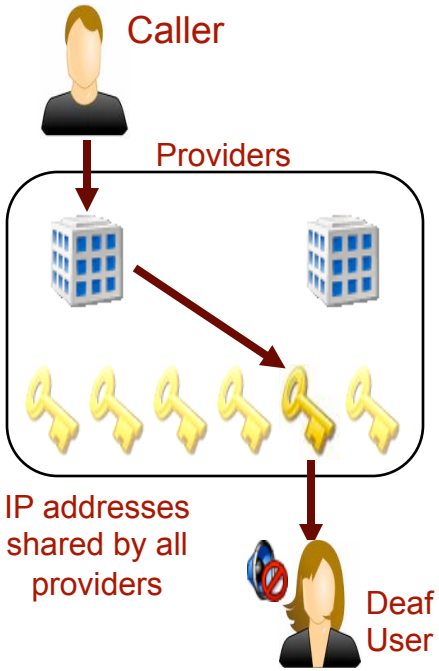
IP addresses, the keys to reaching deaf people, are kept in separate lists by each provider. To reach the called party, the provider handling the call must contact the provider holding the key to complete the call. This method is slower, involves multiple providers for calls, and adds unnecessary signaling steps to the process. It also allows competing providers to monitor each other's customer usage and calling patterns.



Shared

IP addresses shared by all providers

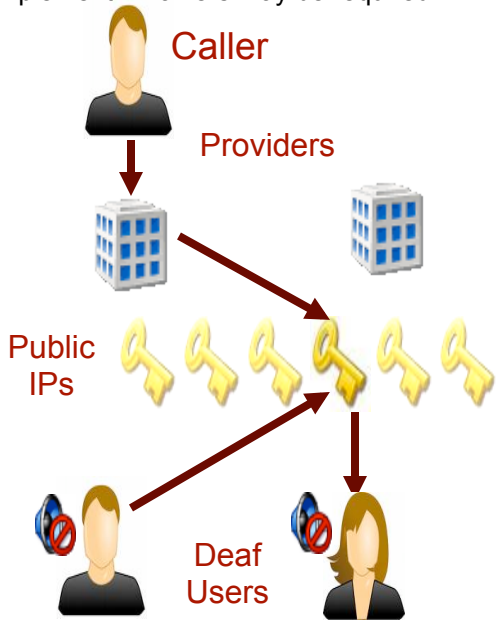
IP addresses, the keys to reaching deaf people, are kept in one list shared by all providers. To reach the called party, the provider handling the call, has direct access to the key to complete the call. Easy for providers with legacy video phones to implement. No waivers required.



Public

IP addresses in public list

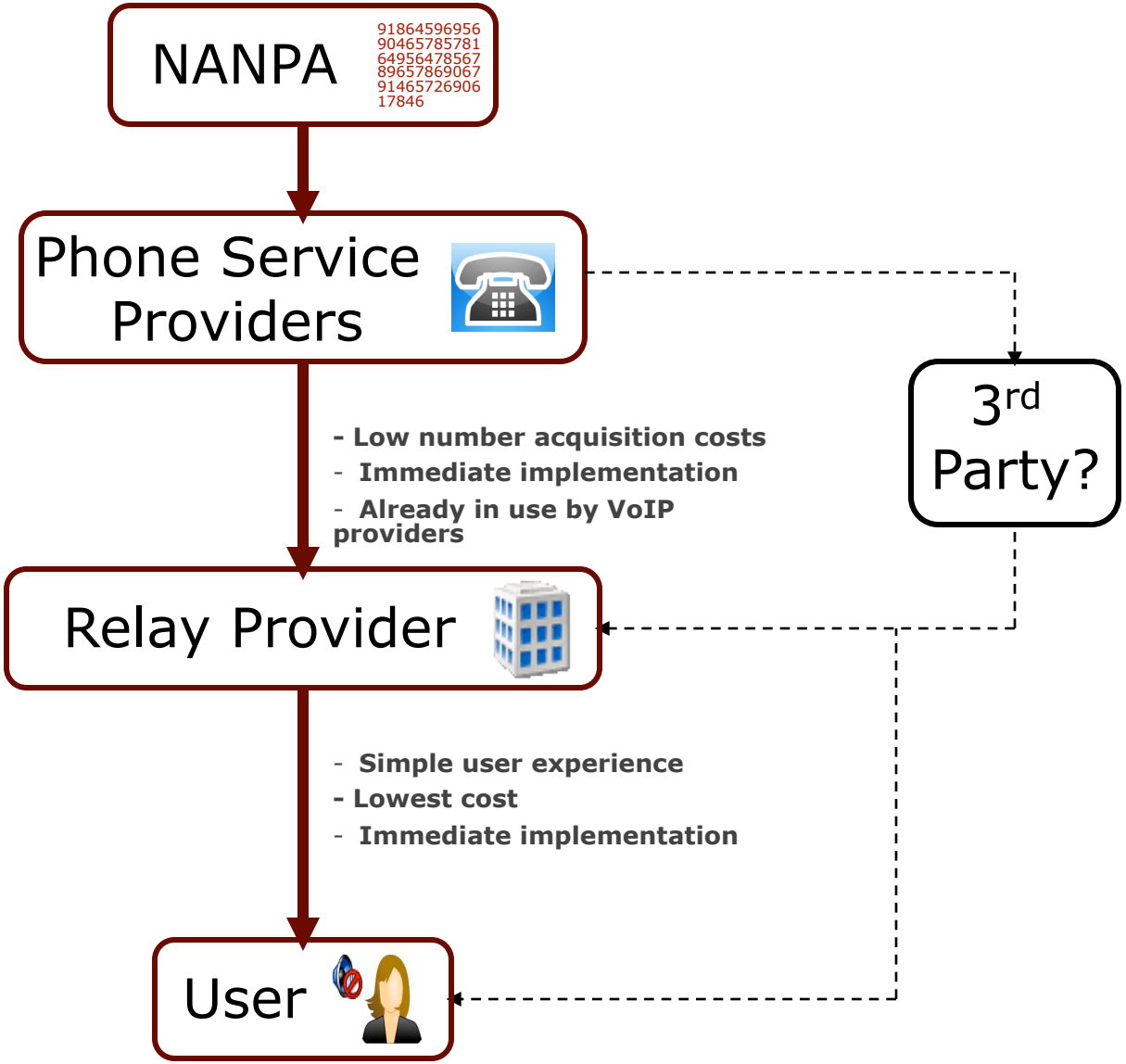
IP addresses, the keys to reaching deaf people, are kept in one public list open to both providers and users. This allows deaf-to-deaf calls without involving providers, but a public list may expose users to marketing and prank calls. This configuration also greatly increases the number of authorized list users and hence the potential for data inaccuracy. Difficult for providers with legacy video phones to implement. Waivers may be required.



DNS vs. NPAC

- DNS is Internet standard for phone number to address translation
  - flexible and extensible
  - Many vendors can provide
  - Can be structured under the control of relay service stakeholders
- NPAC is oriented toward telephone networks
  - Note that telephone companies are the primary users and funders of the NPAC but they don't support using the NPAC for this function
  - NPAC is controlled by telephone companies via the NAPM LLC

How do numbers get to users?

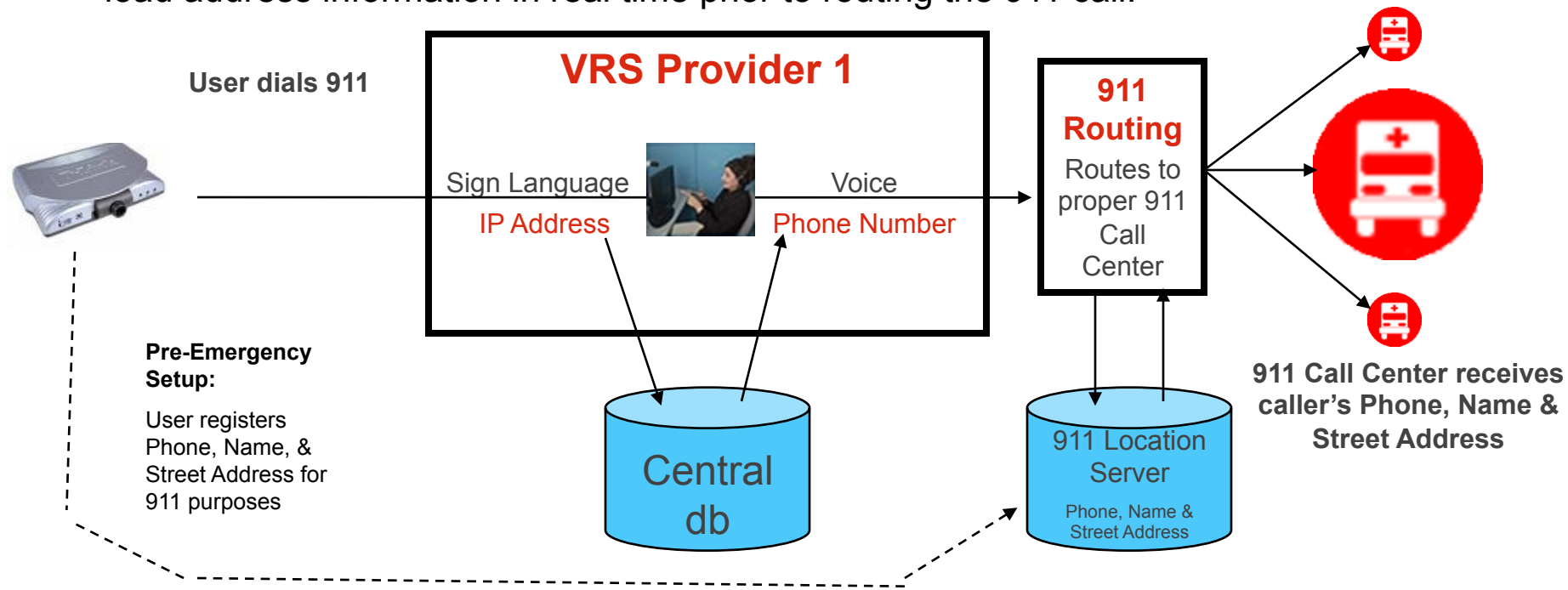


Setting up a neutral third party will:

- **Add considerable cost**
- **Delay implementation with RFP, Bids, Vendor Selection, Company Formation, etc.**
- **Add process steps**
- **Provide no better customer experience than they would get directly through relay providers**

Deaf 911 Call Flow – Leveraging Current Wireless & VoIP 911 Solutions

- When a VRS user obtains her phone number she registers her current street address with the 911 location server – through the VRS provider of her choice.
- On a 911 call, the VRS provider uses the caller's phone number to route call to the 911 service provider for delivery to the appropriate PSAP and interprets, the emergency call for the user & 911 operator. The phone number is also the key for the 911 operator to get the caller location information.
- If caller is not pre-registered, VI will need to obtain location information from caller, load address information in real time prior to routing the 911 call.



Appendix 2 – Additional ORD Slides

Dash ORD – Support Today

- Supports Direct Endpoint Registration/Updates
  - Allows relay providers to map endpoints that are not currently registered to A gatekeeper/proxy to A 10-digit numbers
  - Relay provider registers A URI of h323:username@xxx.Xxx.Xxx.XXX:1720 to specify that the number can be reached directly
  - Calls to number go direct to endpoint
- Supports GateKeeper/Proxy Registration
  - Allows relay providers that have devices registered to A gatekeeper/proxy to map the URI of the gatekeeper/proxy instead of direct device
  - Relay provider registers A URI of h323:1npanxxxxxx@relayprovider.Com: 1720.
  - Calls to number proxy through relay provider

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Dash ORD – Support Today Cont.

- Flexible Support Avoids Delay
  - Supports both current deployment models in use today
  - Avoids forcing relay providers to deploy gatekeeper/proxy prior to implementing A viable 10-digit number plan.
  - Avoids forcing updates of existing endpoints prior to implementing a viable 10-digit number plan.
  - Allows industry to sort out direct versus gatekeeper model without delaying implementation
- Fully Automated Solution Available Today
  - No waiting on carriers to implement NPAC fields throughout their OSS
  - No waiting on deployment of A central voip provider
  - Easy integration for all relay providers

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Dash ORD – Support Tomorrow

- Support For Both Direct and Proxy Avoids Future Changes
  - Industry decision becomes a policy change not a technical change
- Support For Multiple Service Single Number
  - Ability to specify preference of relay methods all tied to a single number.
- Future Industry Changes Isolated To Relay Industry And Third-Party Database Provider
  - No need to coordinate with telecom carriers and wait on there internal system updates

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Dash ORD - Architecture

- Geographically Redundant ENUM Databases
  - SOAP API to update, query, and delete records
  - ENUM interface for query purposes.
  - TLS authentication for API access
  - IP ACL and optional VPN access for ENUM query access
- Flexible Record Support
  - Simple record maps E.164 number to basic URI
  - Parsed format enables easy integration
  - Support for multiple records per E.164 number

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