

LOCAL NUMBER PORTABILITY (LNP)**Pros and Cons of LRN with Flexible Triggers****Pro**

- o This method has the common routing mechanism agreed on by the LNP task force. Multiple triggers are being developed by the vendors.
- o LRN with flexible triggers allows each participating company to utilize the most economical method of triggering for their network.
- o This method meets the long term availability requirements of LNP.

Con

- o Initial per line cost to small/medium LECs will be significant due to the small number of access lines.
- o This method ultimately requires a data base dip for ported and non-porting numbers.
- o Vendors were unsure of the time frame for delivery of flexible triggers Vs. AIN/IN triggers.

Pros and Cons of LRN with AIN/IN Triggers**Pro**

- o This method has the common routing mechanism agreed on by the LNP task force.
- o This method meets the long term availability requirements of LNP.
- o Vendors are proceeding with development of this technology.

Con

- o Requires all participants to invest in expensive AIN/IN when it is not economically justified.
- o Eliminates triggering flexibility for existing LEC networks.
- o Incurs the added expense of requiring data dips for all numbers whether ported or not.

CPC PROPOSAL

CON

- CPC will put pressure on numbering resources because it requires a significant number of codes that will be drawn from available NPAs.
- Incumbent LECs will be required to determine appropriate terminating office since the 3-digit code assigned to each carrier does not unambiguously identify the terminating switch.
- All calls will require a database look-up and potentially a second look-up in the terminating carrier's network causing increased call setup time.

RTP PROPOSAL

PRO

- Only calls to LNP customers require additional processing. Calls to non-ported numbers route as usual without additional call set-up time.
- The use of a specific routing number that identifies the terminating switch minimizes the impact on numbering resources.

CON

- There is a potential for calls to ported numbers will require routing to two different destinations that may increase call setup times.
- Calls to ported numbers causing routing to two different locations may cause additional blocking due to trunk seizure necessary for call completion.
- Changes to SS7 messages are required as well as full deployment of the SS7 network.

COMMON ROUTING

PRO

- The use of a common routing mechanism by all carriers and the potential use of alternative triggering mechanisms according to carrier choice has merit and warrants further review. This could lead to a more cost-effective implementation of LNP.

CON

- Since the option was introduced at the time of the "voting," specific information for evaluation was not available.
- Allowing carriers a choice of alternative triggering mechanisms requires that the triggering mechanisms meet certain technical parameters to ensure competitive neutrality in their application.

MCImetro's COMMENTS ON LNP PROPOSALS - PROs and CONs

Carrier Portability Code - as scored against CA LNP Framework in Nov-Dec, 1995

PROs

1. earliest implementation date of all proposals due to minimal switch impacts and no changes to SS7 signaling
2. equal treatment (e.g., performance and reliability) for ported and non-portable lines within a portable NPA-NXX
3. transparent to end users in terms of feature functionality

CONs

1. adverse impacts on North American Numbering Plan (NANP) resources which are mitigated if viewed as a transitional approach
2. complications arise in resolution of overlapping CPCs, NPAs, and NXXs
3. as a transitional (i.e., interim) database solution, this will have added burden of two-step implementation

Non-Geographic Number - as scored against CA LNP Framework in Nov-Dec, 1995

PROs

1. may limit SS7 traffic (i.e., no change to call processing for non-portable lines)

CONs

1. requires number change for customer to change service provider (i.e., does not satisfy the definition of service provider portability as given in the Telecommunications Act of 1996)
2. requires flash-cut nation-wide implementation
3. breaks end user services that are dependent on dialed number of ported customer

Location Routing Number - as scored against CA LNP Framework in Nov-Dec, 1995

PROs

1. single domain numbering plan solution that supports existing 6-digit routing mechanisms, thus preserving current infrastructure
2. graceful error recovery through redundant databases and default routing
3. network address format does not adversely affect NANP

CONs

1. existing switch limitations on number of NPA-NXXs that can be opened for line translations
2. requires minor modifications to existing SS7 signaling parameters
3. switch software delivery schedules introduce uncertainty for availability

Release-To-Pivot (stand alone) - as scored against CA LNP Framework in Nov-Dec, 1995

PROs

1. limits SS7 traffic (i.e., no change to call processing for non-portable lines)
2. single domain numbering plan solution
3. network address format does not adversely affect NANP

CONs

1. provides different levels of service for ported and non-portable customers
2. requires more complex SS7 changes in addition to those required for LRN, making availability an issue
3. incumbent networks remain excessively involved in the processing of calls to numbers ported away from their networks

II. The second set of optional LNP solutions all include CPC as either the complete solution or as evolutionary to other solutions. In either case the pros and cons are very similar.

CPC, CPC/LRN, and CPC/LRN/RTP:

PROS - Also, is a single number solution

CONS - CPC is not a long term solution and contains throw away technology.

- All are very costly to implement and difficult to administer.
- Migration from CPC to the other options will be problematic and costly. In addition, could end up with multiple routing schemes in the network simultaneously.

III. **NGN:**

PROS - Is one of the low cost and efficient (only ported numbers are queried) options.

- Calls to ported numbers are easily distinguishable.
- Evolution to Location Portability is very simple and straight forward.

CONS - Requires a number change for ported customers.

- ambiguity exists with calling number based services originated from ported numbers.
- Has a negative impact on numbering resources.

NON GEOGRAPHIC NUMBER (NGN)

PRO

- Easily implemented in existing Public Telephone network.
- Least expensive of all solutions.
- Requires very little development.

CON

- Requires two telephone numbers, seriously impacting NANP resources.
- Requires initial number change.
- 911, Operator systems and CLASS features seriously impacted.

CARRIER PORTABILITY CODE (CPC)

PRO

- Single telephone number.
- Little impact on existing NANP code and number administration.

CON

- Requires large scale 3rd party LNP database infrastructure.
- Requires a new CPC administration scheme, administrable at LATA levels
- Requires nearly as much development as long term solutions.

COMBINATIONS OF VARIOUS SOLUTIONS

PRO

- Greatest flexibility in deployment options.

CON

- Except for LRN / RTP working together, any other combination would likely introduce too many variables to be of practical or economic advantage.
- Additional costs to develop and implement more than one solution.

Pros None.

Cons Requires initial number change. Requires two NANP numbers for each customer using feature.

Requires national planning to insure all calls can be unambiguously routed.

The extensive feature interaction problems due to two numbers being assigned per line have not been resolved as yet. Solutions may be costly.

RTP (see RTP/lrn)

RTP/lrn

Pros Reduces number of database queries and their associated costs.

Cons Treats all ported calls differently than non-ported. Donor switch of RTP carrier is required in call processing signaling path for ported calls so all carriers impacted by a donor switch failure. Requires SS7 signaling between certain network switches which could impact some carriers if using this plan.

Not available on as timely a schedule as other plans since both LRN and RTP must be made available.

Software costs will be high since plan requires development in addition to LRN plan.

CPC/LRN

Pros None (Assumes no difference in availability time frame for CPC versus LRN).

Cons Requires additional costs for a transition from CPC to LRN.

CPC/LRN/RTP (CPC/RTP/lrn)

Pros A database solution may be available earlier.

Cons Requires additional costs for a transition from CPC to RTN/lrn.

February 27, 1996

TO: Pat vanMidde
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From: Pamela Kenworthy
MFS Communications Company, Inc.
6 Century Drive
Parsippany, NJ 07054

VIA FACSIMILE (415) 546-6072

Per the meeting notes dated February 20, 1996, the following represents the Pro's and Con's associated with LRN. MFS is not evaluating another plan at this time.

Pro

Maximum reliability through default routing
Trigger minimizes the number of NP queries
Switch, billing and rating requirements
almost fully developed

Con

No direct connectivity for originating
calls from a non-NP capable EO
Some ANSI development required
911 and E911 impacts not fully
known

If you have any questions, please do not hesitate to contact me. My telephone number is 201 938-7387. Thank you.

LNP Framework/Technical Matrix

LNP Framework

Attribute	Description	Weight	
<ul style="list-style-type: none"> 2. N-1 DIP <ul style="list-style-type: none"> a. Existing b. New 3. Terminating, DIP <ul style="list-style-type: none"> a. Existing b. New 4. Look Ahead/RTP 	<p>AIN trigger used to launch queries at N-1 switch</p> <p>Are existing AIN triggers sufficient?</p> <p>Are new AIN triggers required? If so, describe</p> <p>AIN trigger used to launch queries at terminating switch</p> <p>Are existing AIN triggers sufficient?</p> <p>Are new AIN triggers required? If so, describe</p> <p>How does the routing path interact with triggering mechanisms that have been identified in number portability forums?</p>	1	
<p>G. IN Triggers</p> <ul style="list-style-type: none"> 1. Originating DIP <ul style="list-style-type: none"> a. Existing b. New 2. N-1 DIP <ul style="list-style-type: none"> a. Existing b. New 3. Terminating, DIP <ul style="list-style-type: none"> a. Existing b. New 4. Look Ahead/RTP 	<p>IN trigger is used to launch database queries at the originating switch</p> <p>Are existing IN triggers sufficient?</p> <p>Are new IN triggers required? If so, describe</p> <p>IN trigger used to launch database queries at N-1 Switch</p> <p>Are existing IN triggers sufficient?</p> <p>Are new IN triggers required? If so, describe</p> <p>IN trigger used to launch database queries at the terminating switch</p> <p>Are existing IN triggers sufficient?</p> <p>Are new IN triggers required? If so, describe</p> <p>How does the routing path interact with triggering mechanisms that have been identified in number portability forums?</p>	1	
<p>H. Triggering Interactions</p>	<p>How does your triggering proposal interact with your routing proposals?</p>	1	
Sub Total		10	
3. Routing of Calls		I	C
<p>A. Tandem Interconnection</p>	<p>Capability to interface ALEC or LEC EOs to tandem switches</p>	3	

* Change
 A Addition
 D Deleted

M - Mandatory

9/25/95
I - Importance

California Local Number Portability Task Force

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LNP Framework

Attribute	Description	Weight	
1. TOPS 2. OSPS 3. ----- H. 911/E911 Sys. Interface Impact I. DA Sys. Interface Impact J. Billing Interface Impact K. Signaling Requirements 1. SS7 Interoffice Signaling 2. MF Interoffice Signaling L. Error Handling	Describe signaling resources & type required Describe signaling resources & type required Describe signaling resources & type required Requires SS7 signaling between originating, intermediate, and/or terminating switches Allows MF signaling between originating, intermediate, and/or terminating switches Properly handles errors & recovers gracefully (including looping errors). Describe capabilities	2 1 2 2 2 2	
Sub Total		12R/12	
5. Performance		I	C
A. Call set-Up/Post Dial Delay B. Transmission Quality C. Blocking D. Network Reliability Impact Describe impact to 4.F. on Network Reliability. Method of Limiting Queries E. Prevents "Looping" F. Limits Queries on Intraoffice Calls G. Limits Queries on Interoffice Calls	State incremental impact on call set-up time for calls to ported and non ported numbers and describe how these figures were determined, i.e., intra-switch, inter-switch, 3 switch intraLATA, 4 switch interLATA. Explain differential between MF and SS7, and interworking. State impact on Transmission quality (ported & non-ported numbers) Describe impact upon Call Completion Rate (ported & non-ported numbers) Describe impact when LNP database is unavailable or overloaded (ported & non-ported numbers) Must not dilute "network reliability" to non-ported numbers (need to define measure) Prevents the possibility of multiple trunk seizures due to a looping condition Offers a method to avoid queries on every intraoffice call Offers a method to avoid queries on every interoffice call (originating, intermediate, or terminating).	3 2 2 3 3 3 3	

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Attribute	Description	Weight
J. Screening List Editing	<ol style="list-style-type: none"> 1. AC/AR to an on hook subscriber 2. AC/AR to an off hook subscriber <ol style="list-style-type: none"> 1. Incoming call screening tables shall function properly on calls from ported numbers 2. TCAP messages for establishing Screen List Entries shall function properly on ported number entries 	
K. Caller ID and Privacy	<p>The caller ID shall function normally. This shall include passing the proper calling number info and privacy indicators. Caller ID will display the public number, and block display when the privacy indicator is set</p>	
L. Caller ID w/Name	<ol style="list-style-type: none"> 1. The proper calling name shall be displayed 2. The correct name database shall be accessed 3. The service shall interwork with both TR-1188 and AIN CNAM databases 	
M. Call Forwarding	<ol style="list-style-type: none"> 1. The proper calling number fields shall be passed under a call forwarding condition 2. Call forwarding shall be allowed to intraoffice DN's which are ported in or out of the office 	
N. Calls to Ported Service Access Codes Numbers (500, 800, 900 etc.)	<ol style="list-style-type: none"> 1. This solution shall accommodate calls to ported SAC numbers. 2. Mandated call set-up times shall not be compromised 	
O. ISDN Circuit Switched Voice	<ol style="list-style-type: none"> 1. The proper public calling number shall be presented to an ISDN set in the display text information element 2. The proper public calling or billing number shall be presented to an ISDN BRI/PRI in the calling party number/billing number information element 3. The proper redirecting number shall be presented to an ISDN set in the redirecting number information element 	
P. ISDN Circuit-Switched Data	<p>Calls to and from ported ISDN data lines using NANP addresses shall be routed and billed properly</p>	
Q. ISDN Packet Data	<p>Calls to and from ported packet data lines using NANP E.164 addresses shall be routed and billed properly</p>	
R. Network Voice Messaging	<ol style="list-style-type: none"> 1. Calls to ported network mailboxes shall be forwarded properly for mail systems 	

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<p>“SHOW STOPPER”</p>	<p>calling number. Call control must be retained by PSAP.</p> <p>State the impact on call set-up time and post dial delay for calls from ported and non-ported numbers to 911.</p> <p>Describe the impact upon call completion rate from ported and non-ported numbers to 911.</p>		
<p>D 9. DA Features Supported</p>		Deleted	
<p>10. Rating and Billing</p>			
<p>A. Transparency within Rate Center outside Rate Center</p>	<p>Describe the impact to ported and non-ported customers..</p>	2	
<p>B. AMA Recording</p>	<p>Provides capability of recording AMA at the appropriate switching points. Comply w/Bellcore specs. GR-1100-CORE - Billing Format Requirements and Section 8.1 of the LSSGR (TR-NWT-000508)</p>	3	
<p>C. LERG Impact</p>	<p>The LERG can continue to be used for rating purposes without change</p>	3	
<p>D. Sent Collect</p>	<p>Ensure that out-of-state billing information can be forwarded to the proper billing center</p>	2	
<p>E. 800 Calls from Ported Numbers</p>	<p>1. 800 calls from ported numbers shall be routed based on the resident switch NPA/NXX</p> <p>2. 800 calls from ported numbers shall be rated based on the originating switch NPA/NXX</p>	2	
<p>F. Directory Assistance Call Completion</p>	<p>1. DA Call Completion Systems shall properly rate and bill calls to ported numbers</p> <p>2. The DA system shall be able to determine, rate, and bill calls from ported numbers</p>	1	
<p>G. Access Records</p>	<p>Provides the ability to generate accurate access recordings</p>	3	
<p>I. 10 Digit Number Recording</p>	<p>Describe capability to record a 10-digit number with its appropriate NPA. Requires that two NPAs with the same NXX be supported in one switch</p> <p>Rating and billing to the user must be transparent.</p>	2	

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Attribute	Description	Weight	
IAESS E. Ericsson F. Non-Conforming Switches G. TOPS/OSPS Enhancements H. STP I. SCP	Describe impact on TOPS/OSPS system Describe impacts of 4. F. and availability if known Is each carrier required/allowed to own an SCP? Can carriers share an SCP? Can Number Portability share a database with AIN?	Sub Total 6	
13. AIN/IN Impact			
A. Performance Impact B. AIN Services Impact		2 2 Sub Total 4	
14. Application/Expandability		I	C
A. Service Provider B. Location (Wirectr, NPA, LATA, State, etc.) C. Service D. Wireless	Solution must be capable of providing service provider portability Describe how solution is migratable to location portability Describe how solution is capable of providing service portability. Describe how solution is capable of accommodating wireless networks.	3 2 1 Description is Mandatory Sub Total 6	
15. Impact on N.A. Numbering Plan			
A. Number Conservation/Utilization/Efficiency	The number portability solution should not unduly accelerate the depletion of the numbering resource i.e., NPA, NXX.. Ideally, the number portability solution should conserve the North American Numbering Plan (NANP). What number resources are used? How are number resources conserved?	2	

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Attribute	Description	Weight	
2. Test Numbers	Specific test number ranges have been set aside to be only used for testing both internally or externally. Example: Nationwide Autoroaming tests.	2	
Special Corporate Account Numbers	Many Corporations require complete ranges from specific NXX's for their internal accounts with Wireless service providers.		
1. Special services for 100s groups	Some services are uniquely defined within a specific quantity of numbers.	2	
2. Consecutive Numbers	Some services are uniquely defined within a consecutive range of numbers.	2	
	Sub Total	9	
HLR/SCP/MSC/STP	Network elements currently used in the Wireless Environment.		
A. Performance			
1. Capacity	Describe impact on STP capacity if STP GTT is used. Current SS7 infrastructures are designed never to exceed their capacity, should increased load occur with the addition of NP then current SS7 infrastructures will need to be expanded. State the impact of your architecture on the signaling network in a typical area containing 12 MSCs and 6 HLRs, assuming 20,000 ported numbers out of 1,500,000. Assume an average of 1.65 Busy Hour Originating Calls per station, 1.40 Busy Hour Terminating Calls per station, and .4 Busy Hour Intraoffice calls per station. Describe impact on MSC if MSC GTT is used. Describe the capacity impacts on HLR/SCP.	3	
2. Processor load	What will be the percentage increase in processor loads for each element	2	
3. Processor Utilization	Discuss the impact on the Processor Utilization, including Transaction Per Second, due to the increased processing time per call resulting from NP database dip or 10 digit GTT (if implemented).	2	
4. Call setup/post dial delay	State impact on call setup time and post dial delay for calls to ported and non-ported numbers.	3	
B. Signaling Protocol Requirements			
1. Protocol Impacts	Describe changes needed in the following signaling protocol implementations: 1. Wireless Intelligent Network (WIN) (proposed)	3	

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<p>E. Impact on CRMS (Communications Radio Mobil Service) switches</p> <ol style="list-style-type: none"> 1. Motorola 2. AT&T 3. Ericsson 4. 5. 	<ul style="list-style-type: none"> • Wireless mobile originated to a land-line number belonging to a ported or a non-ported NPA-NXX block. • Call delivery to a wireless mobile subscriber belonging to a ported or a non-ported number block; <ol style="list-style-type: none"> 1. When the mobile is registered in the Home MSC 2. When the mobile is registered in the Visited MSC (Call delivery using Temporary Line Directory Number - TLDN) <p>Please explain the impact on existing routing and translation functions. Additionally, in the context of message flow, discuss SCCP vs. MTP routing as it relates to HLR/SCP redundant DBs.</p> <p>Describe impact on switch hardware & software Answer mandatory</p>	M	
Sub Total		44	
20. Nationwide Roaming/Technical considerations	Nationwide Roaming allows subscribers to autoroaming across the nation, while utilizing most of the same services available in their home market.	I	C
A. Protocols/Network Topology	Is IS-41/IS-652 protocol change necessary for processing queries to the NP database? How would your proposal accommodate Registration/Validation process and minimize impacts on node functionality.	3	
B. Network address	How does your proposal address the need for nationwide wireless networks to be updated with all number portability network addresses, such as logical addresses of switches, PC/SSN of NP databases, HLRs, STPs, and MSCs ?	2	
C. Interconnection points	Are any changes proposed to current SS7 interconnections between Nationwide	2	

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Attribute	Description	Weight	
<p>C. Responsibility</p> <p style="margin-left: 20px;">1. Actions to be taken</p> <p>D. Cost/Revenue Loss</p>	<ul style="list-style-type: none"> • What are the possible fraud scenarios related to NP administration and how are these addressed in your proposal ? Responsibility for fraudulent activity should be established prior to the implementation of NP. All actions to prevent fraudulent activity should be established prior to the implementation on NP. Cost/Revenue Loss due to fraudulent activity should not be aided by the impacts of NP. <p style="text-align: right;">Sub Total</p>	<p>2</p> <p>3</p> <p>11</p>	
22. Rating and Billing - Wireless	Rating and billing will be impacted by number portability.		
<p>A. Market Impact</p> <p style="margin-left: 20px;">1. Transparency</p> <p style="margin-left: 20px;">2. AMA Recording</p> <p style="margin-left: 20px;">3. Lerg Impact</p> <p style="margin-left: 20px;">4. Settlement Process</p>	<p>Rating and billing modifications may have great impacts on all markets current post processing methods</p> <p>Customers shall perceive no difference when a number is ported.</p> <p>Provides capability of recording AMA at the appropriate switching points. Describe any impacts on existing formats.</p> <p>The LERG can continue to be used for rating purposes without change.</p> <p>If NP traffic for wireless carriers in it's initial stages does not warrant the economics of purchasing their own LNP, then a settlement process needs to be considered between the wireline and wireless carriers for queries to the wireline LNP's. A method must be defined to collect the number of query records for LNP Dips.</p> <p style="text-align: right;">Sub Total</p>	<p>3</p> <p>3</p> <p>1</p> <p>2</p> <p>9</p>	

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Scoring Activity Results

ATTRIBUTE - TRIGGERING					
COMPANY NAME	CPC	GEO/LN	LANP	LRN	RTP
CITIZENS	23	17	25	27	21
ROSEVILLE	27	21	27	27	30
GTE CA	26	25	26	26	18
AT&T	30	11	30	30	14
MCI & MCImetro	30	22	30	30	27
PACIFIC BELL	24	23	22	27	30
DEPT OF CONSUMER AFFAIRS	24	22	25	27	27
CPUC DRA	30	20	27	30	30
CCTA	30	20	30	30	30
TCG	30	21	30	30	26
MFS	27	27	27	27	27
ELI	28	12	30	30	25
CONTEL CA	25	19	28	25	11
CELLULAR (AS A BLOCK TALLY)					
TIME WARNER	30	20	30	30	30
FALCON CABLE SYSTEMS	30	20	30	30	30
COX	30	20	30	30	27
TOTAL TALLY	444	320	447	456	403

ATTRIBUTE - SIGNALING	CPC	GEO/LN	LANP	LRN	RTP
COMPANY NAME					
CITIZENS					
ROSEVILLE					
GTE CA					
AT&T					
MCI & MCImetro					
PACIFIC BELL	-21	35	-21	14	17
DEPT OF CONSUMER AFFAIRS					
CPUC DRA					
CCTA					
TCG					
MFS					
ELI					
CONTEL CA					
WIRELESS (AS A BLOCK TALLY)					
TIME WARNER					
FALCON CABLE SYSTEMS					
COX CABLE					
TOTAL TALLY	-21	35	-21	14	17

TRIBUTE - SERVICE INTERACTIONS					
COMPANY NAME	CPC	GEO/LN	LANP	LRN	RTP
CITIZENS	36	24	36	36	24
ROSEVILLE	24	12	36	36	24
GTE CA	24	24	12	12	24
AT&T	36	12	24	36	36
MCI & MCImetro	36	24	24	36	36
PACIFIC BELL	24	12	12	24	36
DEPT OF CONSUMER AFFAIRS	24	24	24	36	36
CPUC DRA	36	24	36	36	36
CCTA	36	16	36	36	36
TCG	36	24	24	36	36
MFS	24	24	24	24	24
ELI	24	12	24	36	24
CONTEL CA	24	24	27	24	24
WIRELESS (AS A BLOCK TALLY)					
TIME WARNER	36	12	36	36	36
FALCON CABLE SYSTEMS	36	16	36	36	36
COX CABLE	24	26	27	27	22
TOTAL TALLY	480	310	438	507	490

ATTRIBUTE - 911/E911 IMPACT					
COMPANY NAME	CPC	GEO/LN	LANP	LRN	RTP
CITIZENS	6	3	6	6	6
ROSEVILLE	3	3	3	3	3
GTE CA	9	9	9	9	9
AT&T	9	3	9	9	9
MCI & MCImetro	9	6	6	9	9
PACIFIC BELL	9	6	3	9	9
DEPT OF CONSUMER AFFAIRS	9	6	6	9	9
CPUC DRA	9	9	9	9	9
CCTA	9	9	9	9	6
TCG	9	9	6	9	9
MFS	9	9	9	9	9
ELI	9	6	9	9	9
CONTEL CA	9	9	7	9	9
WIRELESS (AS A BLOCK TALLY)					
TIME WARNER	9	6	9	9	9
FALCON CABLE SYSTEMS	9	9	9	9	9
COX CABLE	6	9	9	9	6
TOTAL TALLY	132	111	118	135	129

ATTRIBUTE - OPERATIONS SUPPORT SYSTEMS IMPACT					
COMPANY NAME	CPC	GEO/LN	LANP	LRN	RTP
CITIZENS	12	12	12	30	12
ROSEVILLE	18	12	18	18	18
GTE CA	24	24	24	24	24
AT&T	34	16	16	36	28
MCI & MCImetro	33	18	18	33	32
PACIFIC BELL	24	26	20	32	34
DEPT OF CONSUMER AFFAIRS	26	16	26	30	32
CPUC DRA	24	18	24	30	30
CCTA	34	32	26	36	36
TCG	34	32	26	36	34
MFS	12	12	12	12	12
ELI	30	12	30	30	28
CONTEL CA	24	30	23	24	24
WIRELESS (AS A BLOCK TALLY)					
TIME WARNER	34	16	26	36	36
FALCON CABLE SYSTEMS	34	32	26	36	36
COX CABLE	36	30	36	36	30
TOTAL TALLY	435	338	363	479	446

ATTRIBUTE - AIN/IN IMPACT					
COMPANY NAME	CPC	GEO/LN	LANP	LRN	RTP
CITIZENS	12	4	12	12	12
ROSEVILLE	8	8	8	8	12
GTE CA	6	12	6	8	10
AT&T	12	12	12	12	12
MCI & MCImetro	12	10	10	12	12
PACIFIC BELL	4	12	4	4	12
DEPT OF CONSUMER AFFAIRS	8	8	8	12	12
CPUC DRA	12	12	12	12	12
CCTA	12	12	12	12	12
TCG	12	12	12	12	12
MFS	8	10	8	8	10
ELI	8	4	10	10	4
CONTEL CA	10	10	10	10	12
WIRELESS (AS A BLOCK TALLY)					
TIME WARNER	12	12	12	12	12
FALCON CABLE SYSTEMS	12	12	12	12	12
COX CABLE	8	8	10	10	12
TOTAL TALLY	158	158	158	166	180

ATTRIBUTE - IMPACT ON N.A.N.P.					
COMPANY NAME	CPC	GEO/LN	LANP	LRN	RTP
CITIZENS	12	6	18	18	12
ROSEVILLE	10	10	10	14	14
GTE CA	2	16	6	10	10
AT&T	10	12	12	18	14
MCI & MCImetro	18	6	12	18	18
PACIFIC BELL	4	4	4	16	16
DEPT OF CONSUMER AFFAIRS	12	10	12	16	16
CPUC DRA	12	12	12	18	18
CCTA	12	12	18	18	18
TCG	12	12	16	18	18
MFS	10	10	8	18	12
ELI	6	6	18	18	14
CONTEL CA	4	18	13	10	10
WIRELESS (AS A BLOCK TALLY)					
TIME WARNER	12	10	18	18	18
FALCON CABLE SYSTEMS	12	12	18	18	18
COX CABLE	14	16	16	16	18
TOTAL TALLY	162	172	211	262	244

	CPC	GEO/LN	LANP	LRN	RTP
CITIZENS		Y	Y		
ROSEVILLE		N	Y		
GTE CA		N	A		
AT&T		Y	Y		
MCI & MCImetro		Y	Y		
PACIFIC BELL		N	Y		
DEPT OF CONSUMER AFFAIRS		N	Y		
CPUC DRA		N	Y		
CCTA		N	Y		
TCG		Y	Y		
MFS		Y	Y		
ELI		Y	Y		
CONTEL CA		N	Y		
CELLULAR (AS A BLOCK TALLY)			Y		
TIME WARNER		Y	Y		
FALCON CABLE SYSTEMS		N	Y		
COX CABLE		Y	Y		
TOTAL TALLY TO ELIMINATE=15		N=8	N=0		
ATTRIBUTE	CPC	GEO/LN	LANP	LRN	RTP
End User Impacts	662	423	675	682	641
Triggering	444	320	447	456	415
Routing	677	676	714	781	697
Signaling	301	356	276	296	171
Performance	924	965	929	993	973
Service Interactions	480	310	438	507	490
Operator Services	524	486	523	553	484
E911	144	114	115	144	144
Rating & Billing	922	821	837	987	960
OSS	435	338	363	479	446
Switch	186	144	173	222	168
AIN/IN	156	158	158	166	186
Applicability/Expandability	212	184	265	271	210
Impact on NANP	162	164	207	262	256
Admin	144	150	149	172	150
TOTAL WIRED	6373	5609	6269	6971	6391
	91%	80%	90%		92%
TOTAL WIRELESS	209	218	208	214	217
	92%	81%	90%		92%
TOTAL	6582	5827	6477	7185	6608