

Overview of the Point of Contact handle CKN23-ARIN (No, Contact Known) Issue

Problem Statement:

There are thousands of instances of the ARIN Point of Contact (POC) handle “No, Contact Known” or CKN23-ARIN registered in the ARIN database. This handle is associated with directly registered allocations and assignments (those who received their resources directly from ARIN or a predecessor registry), and also occasionally with reassignment records put into the ARIN database by an upstream ISP on behalf of their customer. The majority of registration records that had CKN23 added as the POC handle, are associated with legacy resources (those issued prior to ARIN’s inception in Dec. 1997).

Several problems have arisen from this situation. First, these records can appear to the general public as being abandoned, which makes them a prime target of hijackers looking for abandoned resources to take over. Second, it makes it appear as if the ARIN database is out of date and inaccurate, which could lessen the community’s confidence in ARIN’s ability to maintain accurate data. And finally, it has led to much unhappiness by customers who were formerly listed as the POC of record on resource records, and had their Resource Tech POC handles removed from the network record and moved to the Org record as the Abuse POC. Additionally, they do not like the fact that the Org they are associated with has a “No, Contact Known” (CKN23-ARIN) listed as its Admin and Tech POC.

An example of the POC handle CKN23-ARIN in the ARIN Whois can be found here:

<http://whois.arin.net/rest/org/THESOF>

Background:

Phase 1:

In 2002, ARIN completed a major overhaul of its existing database, converting it to a new relational database structure that keyed off of an Organization record (Org ID), a brand new attribute. Prior to conversion, ARIN's database contained only three registration record types: network registration records (including network reassignment records), POC registration records, and Autonomous System Number registration records. At that time, only one type of POC existed, the Resource POC. With conversion came the creation of not only the new Organization record, but also of several new POC types. These new Org records could have the associated POC types Org Admin, Org Tech, Org NOC, and Org Abuse, and the Resource record (network or ASN) could have the associated POC types Resource Tech (previously existed as Resource POC), Resource Abuse, and Resource NOC.

At conversion, Organization records (ORGs) were created for all Resource registration records, including the legacy networks, based on information derived from the network or ASN registration record that existed at that time. At the time, there were thousands of legacy networks (those issued prior to ARIN's inception) registered in the ARIN database. Most of these networks had no business contract with ARIN, nor any validated points of contact as these legacy records were "inherited" from the Internic when ARIN was formed in December 1997 and most had not been updated or validated in years.

So as to not give authorization to a POC at the ORG level until the registrant established a relationship with ARIN by updating their registration records, the decision was made to put the existing POC data onto the NET_POC_LINK level as a "Resource Tech", so that the legacy registrant only had control over that individual network. In most cases, Organization records created for these legacy networks resided in the database with no Point of Contacts associated with the Org record at all.

The new database structure dictated that POC types such as Abuse and NOC had no authority over the Resource record or the Organization record and existed only for informational purposes to our community, while the Resource Tech POC could change anything on the network record, but nothing on the Org record. One thing to note however, is that due to the mass hijackings we saw in 2000-2002, changes were made to RSD procedures such that when Resource Techs submitted a net mod to

change reverse DNS delegation for the network, it would drop to a cleanup file where RSD could verify and “vet” the organization and manually work with them on updating their records as needed. If RSD was able to establish the fact that they were the original POC on the Resource record and was also able to “vet” the organization, the Resource Tech could then be added to the Organization record as the Org Admin. Org Admin and Org Tech POCs had full authority over not only the Org record, but also over the Resource record.

Examples:

Whois Example Output (Legacy – Before 2002 Database/Template Conversion)

```
XYZ Technologies, Inc. (NETBLK-XYZ123)
1234 Evergreen Terrace, Suite 601
Springfield, Virginia 22151

Netname: XYZ123
Netblock: 192.0.2.0 - 192.0.2.255
Coordinator:
Doe, Jane
(XY12-ARIN) jdoo@XYZTECH.EXAMPLE.NET
(555) 555-5555

Domain system inverse mapping provided by:

AUTH03.NS.XY.NET          198.6.1.83
AUTH00.NS.XY.NET          198.6.1.65

Record last updated on 21-Apr-1998.
Record created on 22-Jan-1994.
```

Organization information not broken out from resource record information

Point of Contact information not broken out from resource record information

Summary of How We Started Legacy



Before 2002, resource records contained the resource allocation information, the organization information, and the contact information in a single record

Summary of How We Started Legacy



Beginning in 2002, this information was split out into multiple records – what we now know as the NET record, the Org Identifier (Org ID), and Point-of-Contact (POC) records

Whois Example Output

Phase 1: Post 2002 Database/Template Conversion

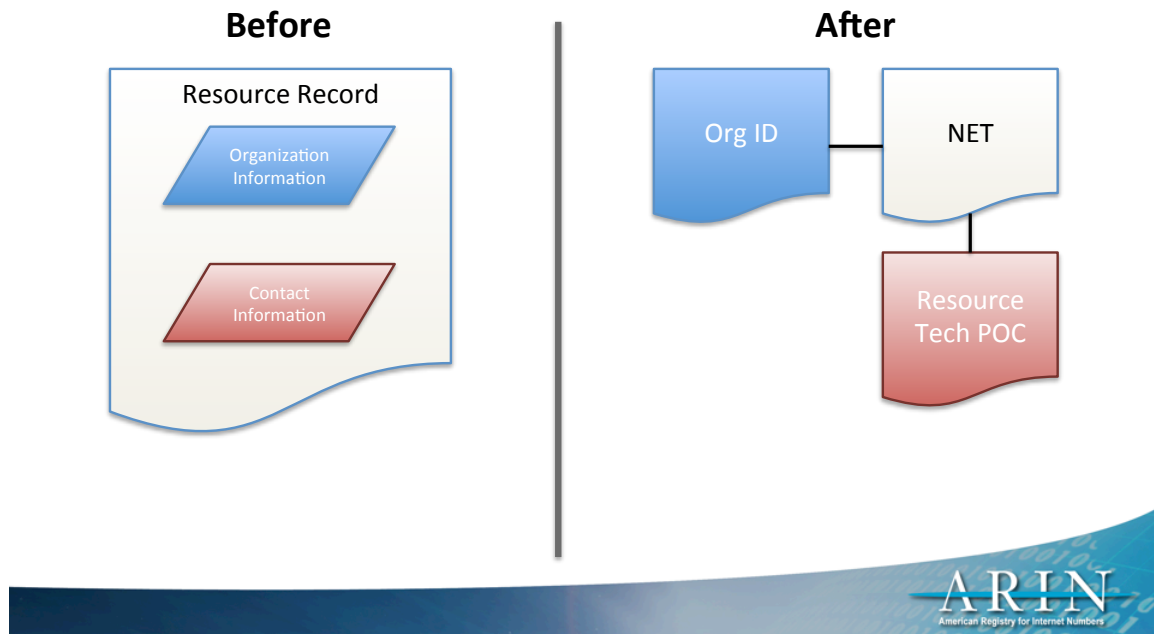
OrgName: XYZ Technologies, Inc. OrgID: XYZT Address: 1234 Evergreen Terrace, Suite 601 City: Springfield StateProv: VA PostalCode: 22151
NetRange: 192.0.2.0 - 192.0.2.255 CIDR: 192.0.2.0/24 NetName: XYZ123 NetHandle: NET-192-0-2-0-1 Parent: NET-192-0-0-0-0 NetType: Direct Allocation NameServer: AUTH03.NS.XY.NET NameServer: AUTH00.NS.XY.NET Comment: Comment: Contact abuse@XYZTECH.EXAMPLE.NET for policy abuse issues. RegDate: 1994-01-22 Updated: 1998-04-21
TechHandle: XY12-ARIN TechName: Doe, Jane TechPhone: 555-555-5555 TechEmail: jdoe@XYZTECH.EXAMPLE.NET

Organization Record
(Org ID) Information
Derived from Legacy
Resource Record
Information

Previous contact info
within resource record
converted to Resource
Tech POC

Overview of How We Got Here

Phase 1: Post 2002 Database/Template Conversion



Phase 2:

On March 19, 2011, with the rollout of the next big database conversion (called the MSN conversion, where reverse delegations went from having reverse delegation specified on networks to having it specified on zones within networks), it became possible for Resource Tech POCs to modify delegations and nameservers without review, because ARIN Online was designed without a vetting/verification feature and allows sign-up for an account, Link to a POC, then Delegation modifications without stopping the action in order for an Org Vetting review to occur first. Prior to the MSN conversion, RSD has been manually vetting not only all new organization registrations, but also any changes made to nameservers on legacy resource records with no Org POCs as this was discovered to be a favorite MO of hijackers.

At this conversion, the POC handle CKN23-ARIN was created to become

both the Admin and Tech POC for any Organization record that had no existing POCs associated with it. This was done to comply with an ARIN business rule that required all ORG IDs to have both an Admin and Tech POC on the Org record. Prior to MSN conversion, while most Org IDs had the required one Org Admin and one Org Tech POC, this business rule wasn't strictly enforced. To ensure clarity going forward, the decision was made to require all Org IDs to have one Admin and one Tech POC

At this same time, any unverified Resource Tech POC associated with a legacy network registration record that had never been updated or validated by ARIN was removed as the Resource Tech of the network record and moved over to the Org record as the Abuse POC. This was done for two reasons: in order to comply with policy 2010-14, which required Abuse POCs on all Org records, and as a security measure so that unverified POCs could not make changes to the DNS nameservers of an organization's network record. This action was directly related to the original business rule established during the 2002 conversion wherein a legacy record that had never been validated, for an org that had no business relationship with ARIN, would not be able to make changes to reverse DNS until/unless they were able to pass a vetting process.

At a meeting held on May 31, 2011 between RSD, Engineering, and the COO to examine ways to address these concerns, the following technical solution was agreed to:

1. Identify all directly-allocated-by-ARIN networks (net type = 'DA' or 'DS'), that have a Resource Tech POC (NET_POC_LINK with type = 'T'), and also belong to an ORG that has NEITHER Admin NOR Tech POCs (ORG_POC_LINK with type = 'AD' or 'T').
2. Using the POC handle(s) of the Resource Tech POC(s), create an ORG_POC_LINK record with type = 'AB', for the Org.
3. Remove the NET_POC_LINK(s) of the Resource Tech POC(s) from the Network.

****Worth Noting:**

No point of contact records were completely removed in this process, but rather, they were removed from the network record and added to the Org record. So in every case where an old existing point of contact existed, it still exists today as an Abuse contact record associated with the same network it was associated with all along.

RSD has implemented a half-measure process whereby an ex-Resource Tech POC that requests to be moved back as the Resource Tech on the Resource record is able to do that by contacting RSD, however, if the organization doesn't "vet", CKN23-ARIN will remain on the Org record as the Org Admin/Tech POCs.

There is another viable instance where CKN23-ARIN is still used today. When a POC (whether it be Org Admin or Tech) contacts ARIN to request that they be removed from a registration record because they are no longer associated with that organization or its resources, RSD will comply with their wishes and removed them from the record. Because ARIN's current business rules require both an Admin and a Tech POC on the Organization record, RSD substitutes that previous POC's handle with the CKN23-ARIN POC handle. This allows us to meet the business rules, while keeping our customers happy and complying with their instructions.

Examples:

Whois Example Output

Phase 2: Post 2011 Database Conversion

```
NetRange: 192.0.2.0 - 192.0.2.255
CIDR: 192.0.2.0/24
NetName: XYZ123
NetHandle: NET-192-0-2-0-1
Parent: NET192 (NET-192-0-0-0-0)
NetType: Direct Allocation
OriginAS:
Organization: XYZ Technologies, Inc. (XYZT)
RegDate: 1994-01-22
Updated: 1998-04-21
Ref: https://whois.arin.net/rest/net/NET-192-0-2-0-1

OrgName: XYZ Technologies, Inc.
OrgId: XYZ123
Address: 1234 Evergreen Terrace, Suite 601
City: Springfield
StateProv: VA
PostalCode: 22151
Country: US
RegDate: 1994-01-22
Updated: 1998-04-21
Ref: https://whois.arin.net/rest/org/XYZ123

OrgTechHandle: CKN23-ARIN
OrgTechName: No, Contact Known
OrgTechPhone: +1-800-555-1234
OrgTechEmail: nobody@example.com
OrgTechRef: https://whois.arin.net/rest/poc/CKN23-ARIN

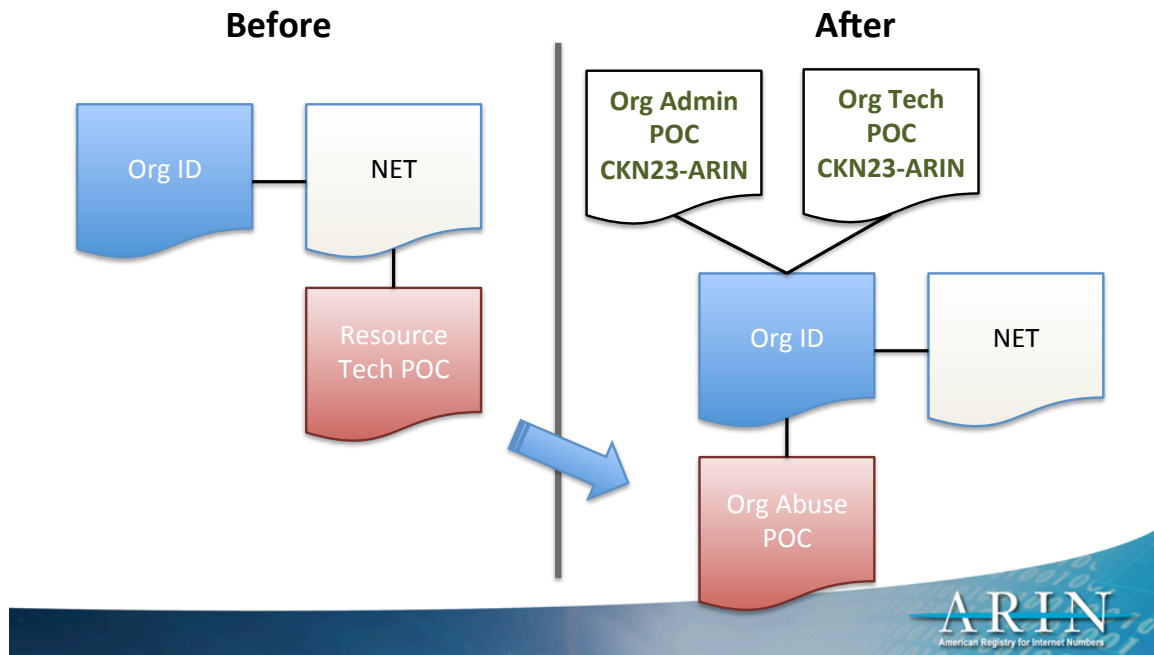
OrgAbuseHandle: XY12-ARIN
OrgAbuseName: XYZ Tech, AlphaNet - Technical Support
OrgAbusePhone: 555-555-5555
OrgAbuseEmail: help@XYZTECH.EXAMPLE.NET
OrgAbuseRef: https://whois.arin.net/rest/poc/XY12-ARIN
```

CKN23-ARIN becomes both the Admin and Tech POC for any Organization record that had no existing POCs associated with it

Former resource Tech POC (taken from original resource record) becomes organization Abuse POC

Overview of Where We Are Now

Phase 2: Post 2011 Database Conversion



Possible Options for Rectifying the CKN23-ARIN issue:

Option 1

Retain the current structure. The decisions regarding the database conversions in 2002 and 2011 were made to protect ARIN from unauthorized attempts to change registration data and to prevent hijackings, particularly of unverified legacy network resources.

Example:

Potential Solutions to CKN23 Issues

Option #1- Retain Current Structure

```
NetRange: 192.0.2.0 - 192.0.2.255
CIDR: 192.0.2.0/24
NetName: XYZ123
NetHandle: NET-192-0-2-0-1
Parent: NET192 (NET-192-0-0-0-0)
NetType: Direct Allocation
OriginAS:
Organization: XYZ Technologies, Inc. (XYZT)
RegDate: 1994-01-22
Updated: 1998-04-21
Ref: https://whois.arin.net/rest/net/NET-192-0-2-0-1

OrgName: XYZ Technologies, Inc.
OrgId: XYZ123
Address: 1234 Evergreen Terrace, Suite 601
City: Springfield
StateProv: VA
PostalCode: 22151
Country: US
RegDate: 1994-01-22
Updated: 1998-04-21
Ref: https://whois.arin.net/rest/org/XYZ123

OrgTechHandle: CKN23-ARIN
OrgTechName: No, Contact Known
OrgTechPhone: +1-800-555-1234
OrgTechEmail: nobody@example.com
OrgTechRef: https://whois.arin.net/rest/poc/CKN23-ARIN

OrgAbuseHandle: XY12-ARIN
OrgAbuseName: Doe, Jane
OrgAbusePhone: 555-555-5555
OrgAbuseEmail: jdoe@XYZTECH.EXAMPLE.NET
OrgAbuseRef: https://whois.arin.net/rest/poc/XY12-ARIN
```

- Pros
 - Has worked to prevent hijackings
 - Continues to provide verifiable audit trail
- Cons
 - May imply resource is abandoned
 - Can further impression that Whois data is out-of-date/incorrect
 - Confusing and non-intuitive to customers, especially as ARIN changed records without prior approval

ARIN
American Registry for Internet Numbers

Work Required:

None

Pros:

- These actions likely prevented thousands of potential hijackings and registration thefts and continue to serve that purpose. They also protected the integrity of the “legacy IPv4 free pool” that will soon become the focus of a very active 8.3 transfer market following the depletion of the ARIN IPv4 free pool.
- Since we have not completely removed any point of contact data (we moved it to the abuse POC field), we still have access to a verifiable audit trail that helps us assist customers who are visiting ARIN for the first time to update their legacy registration records.

Cons:

- These records can appear to the general public as being abandoned, which makes them a prime target of hijackers looking for abandoned resources to take over.
- It makes it appear as if the ARIN database is out of date and inaccurate, which could lessen the community's confidence in ARIN's ability to maintain accurate data.
- It has led to much unhappiness by customers who were formerly listed at the POC of record on Resource records, and had their POC handles moved from Resource Tech POC on the Resource record to Abuse POC on the Org record, and their Org record updated with CKN23-ARIN as the Org Admin and Tech POCs, all done by ARIN without prior approval of the customer.

Option 2

Restore all Abuse POCs on Org records associated with legacy resource records back to their original state as the Resource Tech POC on the Resource record.

Example:

Potential Solutions to CKN23 Issues

Option #2- Legacy Org Abuse POCs Revert to Resource Tech POCs

```
NetRange: 192.0.2.0 - 192.0.2.255
CIDR: 192.0.2.0/24
NetName: XYZ123
NetHandle: NET-192-0-2-0-1
Parent: NET192 (NET-192-0-0-0-0)
NetType: Direct Allocation
OriginAS:
Organization: XYZ Technologies, Inc. (XYZT)
RegDate: 1994-01-22
Updated: 1998-04-21
Ref: https://whois.arin.net/rest/net/NET-192-0-2-0-1

OrgName: XYZ Technologies, Inc.
OrgId: XYZ123
Address: 1234 Evergreen Terrace, Suite 601
City: Springfield
StateProv: VA
PostalCode: 22151
Country: US
RegDate: 1994-01-22
Updated: 1998-04-21
Ref: https://whois.arin.net/rest/org/XYZ123

OrgTechHandle: CKN23-ARIN
OrgTechName: No, Contact Known
OrgTechPhone: +1-800-555-1234
OrgTechEmail: nobody@example.com
OrgTechRef: https://whois.arin.net/rest/poc/CKN23-ARIN

RTechHandle: XY12-ARIN
RTechName: Doe, Jane
RTechPhone: 555-555-5555
RTechEmail: jdoe@XYZTECH.EXAMPLE.NET
RTechRef: https://whois.arin.net/rest/poc/XY12-ARIN
```

- Pros
 - Would address complaints made by some unhappy customers who had been affected
 - Org record still protected from changes, no resource requests/transfers without additional vetting
- Cons
 - Likely many contacts would be out-of-date or inaccurate
 - Because of authority on resource records, could become vector for hijacking attempts/undesired actions
 - Would not address persistence of CKN23-ARIN records as Org Tech and Org Admin POCs



Work Required:

- Run the script that will identify all Abuse POCs associated with legacy resources that had been removed from their resource record when ARIN implemented the CKN23 solution. (*This script has already been developed and should not require additional work).
- Add each of the Abuse POCs from this list back onto the legacy resource record that they were originally associated with. This could likely be done in an automated fashion, but may require engineering work.
- Retain these POC handles on the Org records as the Abuse POC in addition to adding them back as the Resource Tech POC on the resource record.

- Retain the CKN23 handles as the Admin and Tech POCs of these legacy Org records.

Pros:

- Reverting the changes made by ARIN to these POC's records back to their original state should appease many of these customers and could potentially lessen the number of complaints ARIN receives about this.
- Even if these POCs were added back as Resource Techs, they would be unable to make any changes to the Org record, nor would they be able to request resources or a transfer without further verification and vetting.

Cons:

- Because ARIN has limited resources to do any verification of these POC handles, it is likely that many of those that are added back as Resource Tech POCs will be out of date and/or inaccurate.
- These POCs would be able to make several changes to the resource record without any staff oversight including making changes to the nameservers, which in essence, would allow them to "hijack" a resource record if they were no longer associated with the original registrant organization, or if the original registrant organization was no longer in operation. They would also be able to link to the POC handle via ARIN online, which would enable them to change the Resource POC, change the net name, and update the origin ASNs.
- Any POCs associated with direct allocations would also be able to swip reassignments to downstream "customers". Again, this essentially gives them complete control over the resource, which could lead to nefarious activity.
- This action would not change the fact that there would still be thousands of Organization records in the ARIN database with

CKN23-ARIN as their Admin and Tech POCs.

Option 3

Implement Option 2 above, but with the addition of two things:

1. Create a new type of placeholder handle that would replace most of the instances of CKN23 on these legacy Org records. Possible replacement handles could be something like "Legacy Registration - No Organization Contact Available or "Legacy Registration - See Resource Contact Information".
2. Lock all resources associated with these legacy records that have had their Resource Tech POC restored so that they could not make any changes to the record without coming to ARIN first for review of their intended actions. This would allow ARIN the opportunity to vet and verify the POC and the Org before allowing them to make any changes to the resource record or make reassignments to customers (if applicable).
3. Retain the handle CKN23-ARIN only in those instances where there are ARIN issued resources (or their associated Organization), or reassignment records with points of contact who specifically asked to be removed and had no replacement, as described in the summary section above.

Example:

Potential Solutions to CKN23 Issues

Option #3 - Same as Option #2, with new placeholder handle and lock on resources

```
NetRange: 192.0.2.0 - 192.0.2.255
CIDR: 192.0.2.0/24
NetName: XYZ123
NetHandle: NET-192-0-2-0-1
Parent: NET192 (NET-192-0-0-0-0)
NetType: Direct Allocation
OriginAS:
Organization: XYZ Technologies, Inc. (XYZT)
RegDate: 1994-01-22
Updated: 1998-04-21
Ref: https://whois.arin.net/rest/net/NET-192-0-2-0-1

OrgName: XYZ Technologies, Inc.
OrgId: XYZ123
Address: 1234 Evergreen Terrace, Suite 601
City: Springfield
StateProv: VA
PostalCode: 22151
Country: US
RegDate: 1994-01-22
Updated: 1998-04-21
Ref: https://whois.arin.net/rest/org/XYZ123

OrgTechHandle: LR-15
OrgTechName: Legacy Registration - No Organization Contact Available
OrgTechPhone: +1-800-555-1234
OrgTechEmail: nobody@example.com
OrgTechRef: https://whois.arin.net/rest/poc/LR-15

RTechHandle: XY12-ARIN
RTechName: Doe, Jane
RTechPhone: 555-555-5555
RTechEmail: jdoe@XYZTECH.EXAMPLE.NET
RTechRef: https://whois.arin.net/rest/poc/XY12-ARIN
```

New placeholder handle (“Legacy Registration”) for Org Admin and Org Tech

Former Org Abuse POC reverted to Resource Tech POC (retained as Org Abuse POC)

Potential Solutions to CKN23 Issues

Option #3 - Same as Option #2, with new placeholder handle and lock on resources

NetRange:	192.0.2.0 - 192.0.2.255
CIDR:	192.0.2.0/24
NetName:	XYZ123
NetHandle:	NET-192-0-2-0-1
Parent:	NET192 (NET-192-0-0-0-0)
NetType:	Direct Allocation
OriginAS:	
Organization:	XYZ Technologies, Inc. (XYZT)
RegDate:	1994-01-22
Updated:	1998-04-21
Ref:	https://whois.arin.net/rest/net/NET-192-0-2-0-1
OrgName:	XYZ Technologies, Inc.
OrgId:	XYZ123
Address:	1234 Evergreen Terrace, Suite 601
City:	Springfield
StateProv:	VA
PostalCode:	22151
Country:	US
RegDate:	1994-01-22
Updated:	1998-04-21
Ref:	https://whois.arin.net/rest/org/XYZ123
OrgTechHandle:	LR-15
OrgTechName:	Legacy Registration - No Organization Contact Available
OrgTechPhone:	+1-800-555-1234
OrgTechEmail:	nobody@example.com
OrgTechRef:	https://whois.arin.net/rest/poc/LR-15
RTechHandle:	XY12-ARIN
RTechName:	Doe, Jane
RTechPhone:	555-555-5555
RTechEmail:	jdoe@XYZTECH.EXAMPLE.NET
RTechRef:	https://whois.arin.net/rest/poc/XY12-ARIN

- Pros
 - Same benefits as Option #2, but would also help clarify meaning & status of the former CKN23 handle
 - Lock on legacy resource records allows for validation while protecting resources from hijacking
- Cons
 - Likely many contacts would be out-of-date or inaccurate
 - Resource Tech would retain some limited ability to make changes to resource record



Work Required:

- Run the script that will identify all Abuse POCs associated with Legacy resources that had been removed from their resource record when ARIN implemented the CKN23 solution. (*This script has already been developed and should not require additional work).
- Add each of the Abuse POCs from this list back onto the legacy resource record that they had originally been associated with. This could likely be done in an automated fashion, but may require engineering work.
- Lock all legacy resource records associated with these reverted Resource Tech POCs. This would require us to do some work to automate a locking action for all of these resources.

- Retain these POC handles on the Org records as the Abuse POC in addition to adding them back as the Resource Tech POC on the resource record in order to comply with policy 2010-14.
- Replace the CKN23 handles with LR-15 (stands for Legacy Resource 2015) or something similar, as the Admin and Tech POCs of these legacy Org records and add a note that says "Legacy Registration - See Resource Contact Information for last known contact".

Future Work Required In Order to Make This Option Fully Functional:

A future project that I will be proposing relates to the full auditing of data in ARIN's Whois, and more specifically, the legacy data. This project ties into the "Whois accuracy" project in my 2015 Work Plan, but may end up being a stand alone project depending on whether ARIN is able to commit to the resources, time and effort needed to do a comprehensive clean up of the legacy data. Obtaining accurate information about the legacy data and updating (or even removing) these records from the ARIN Whois will have the added benefit of ARIN being able to remove all placeholder POC handles and replacing them with up to date contact and organization information, as well as potentially recovering unused number resources. More detailed information to follow at a later date.

Pros:

- Reverting the changes made by ARIN to these POC's records back to their original state and removing the POC handle CKN23-ARIN from their associated Org record altogether could lessen ARIN's risk. It should also appease many of these customers whose records were changed, and help to lessen the constant complaints that ARIN staff receives about this issue.

- Locking these resource records will resolve several of the issues with restoring these POC records as described above. First, it would prevent them from making any changes to the namservers and potentially hijacking the resource. It would also prevent them from SWIPing to downstream customers. The added benefit to locking these resources records is that it would require them to contact ARIN prior to making any major changes to the resource record and allow ARIN the opportunity to vet and verify not only the POCs, but also the Orgs themselves. This would help us to get the Org ID updated to properly reflect a verified Admin /Tech POC or to guide the customer through the proper transfer procedures if needed, both helping ARIN to maintain an accurate registry.
- This new placeholder POC handle (LR15-ARIN?) would tell the public that although ARIN has not been able to establish an organization point of contact on many of these legacy Orgs, that we have retained the original POCs on the resource records.

Cons:

- Because ARIN has limited resources to do any verification of these POC handles, it is likely that many of those that are added back as Resource Tech POCs will be out of date and/or inaccurate.
- Even with the Resource record being locked, the Resource Tech POC would still be able to change or add a new Resource Tech POC to the Resource record.
 - It is worth noting that this is how the system was designed to function. If a person can successfully link to a POC record, then they can change the information on the POC; it doesn't matter if the POC is a Resource Tech, Admin, Org Tech or other. They all function the same way... if they can successfully link to the POC record, they can then modify it.

Recommendation:

Pursue Option 3, as it would provide us with a fairly comprehensive solution to the CKN23 issue with many pros in its favor and very few cons. It not only rectifies the problem of having thousands of CKN23 POC handles in the database, but it also restores all former Resource Tech POCs back to their original status as the point of contact on their legacy resource record. Both of these actions should help to appease the dissatisfaction that has been expressed by many of the POCs that have been affected by ARIN's actions. The added benefit of locking the associated resources of these restored POCs is that it will allow ARIN the opportunity to obtain updated organization and point of contact information for these legacy resources, thus contributing to the overall integrity and accuracy of the ARIN database.