



African Network Information Centre  
**AFRINIC WHOIS DATABASE**  
ACCURACY REPORT

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## 2 Disclaimer

This report, including all appendices hereto, has been prepared for the exclusive use and benefit of the AFRINIC's Board of Directors, its Resource Members and its Community, i.e. those persons duly subscribed to AFRINIC's mailing lists; and solely for the purpose for which it is provided.

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### 3 Executive Summary

This report is the outcome of an internal comprehensive audit of IPv4 number resources following the misappropriation of IPv4 number resources in the AFRINIC WHOIS Database. Sections 1 to 6 of the report detail the background, scope, and methodology of the audit. In Section 7 we present the findings and report on the associated risks with regards to reclaiming the resources.

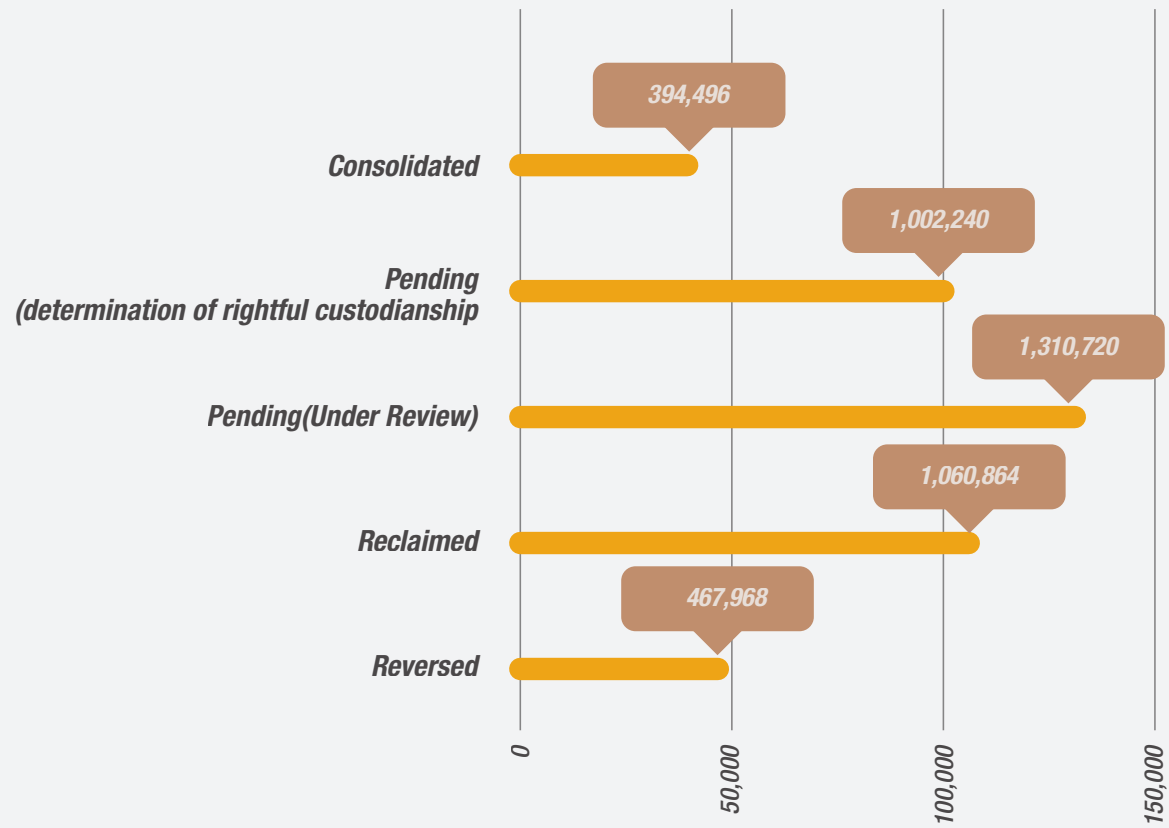
Section 8 highlights the actions taken by AFRINIC, so far, notably to keep its stakeholders informed about the situation, infrastructural improvements regarding its database and a review of its operational business rules and procedures, including but not limited to a review of infrastructural user access.

In Section 9, and having regard to the bottom-up process, the report provides for recommendations to AFRINIC's community so that such policies may be developed through the existing Policy Development Process which may then assist AFRINIC in ensuring at all times an accurate WHOIS Database, thus maintaining the integrity of the AFRINIC registry and databases which have been documented.

### A summary of the findings and actions taken by AFRINIC are as follows:

1. 2,371,584 of IPv4 addresses were, without any lawful authority, misappropriated from AFRINIC's pool of resources and attributed to organisations without any justification;
2. Since February 2020, a total of 1,060,864 IPv4 resources have been reclaimed, i.e deregistered from the AFRINIC WHOIS Database and are presently in 'quarantine' for a period of 12 months. Following the 'quarantine' period, the resources may be added to AFRINIC's pool of resources available for new allocations;
3. A total of 1,310,720 IPv4 resources, related to two distinct organisations, are yet to be reclaimed due to ongoing due diligence;
4. 1,799,168 IPv4 addresses, deemed to be legacy address space appeared to have been compromised and actions have been taken to contact the source-holders thereof;
5. 394,496 legacy IPv4 addresses have subsequently been consolidated at the request of the holding company of the organisations to which the resources were registered;
6. Unsubstantiated changes to 467,968 legacy IPv4 addresses have been reversed;
7. 936,704 legacy IPv4 addresses are currently under dispute and pending determination of rightful custodianship.

## Count of IP addresses vs. Status at November 2020



## 4 Introduction

This report is the outcome of an enhanced internal audit conducted by AFRINIC in respect of IPv4 number resources, including both legacy and non-legacy resources, that fall under the jurisdiction of AFRINIC as the Regional Internet Registry (“RIR”) for the African region.

AFRINIC has an obligation to maintain an accurate WHOIS Database. In this respect, over and above its normal review process, based on media reports on purported thefts and ‘hijacking’ of IPv4 number resources. AFRINIC undertook an audit of all IPv4 number resources, which consisted of verifying the rightful custodianship of those resources. Furthermore, and in regard to its Resource Members, the audit also embarked upon a verification of the processes adopted prior to allocation of IPv4 number resources.

## 5 Background

In or about March 2019, upon receipt of a Court Order from the Supreme Court of Mauritius following an application made by the United States Federal Investigation Bureau (FBI), AFRINIC became aware of certain suspicious activities regarding several IPv4 address blocks which it held. A preliminary investigation carried out internally also revealed that internal staff may, without any lawful authority, have acted in collusion with other third parties. These unlawful acts were the misappropriation of IPv4 resources, held by AFRINIC, which resulted in prejudice to the company and by extension to AFRINIC’s Resource Members and its Community at large.

In this respect, in July 2019, AFRINIC’s Board of Directors commissioned an investigation to be conducted on the matter and with the assistance of the AFRINIC’s sister-RIR, APNIC.

On 01 September 2019,, an online publication entitled “The big South African IP address heist – How millions are made on the “grey” market” by a well-known media company MyBroadband contained serious allegations pertaining to a possible ‘hijacking’ of IP number resources within the African region. The information published by My Broadband also indicated that some resources’ registration data in the AFRINIC WHOIS Database may have been compromised.

In December 2019, APNIC submitted the findings of its investigation. The findings were serious enough and led to AFRINIC initiating disciplinary proceedings against a member of staff (now dismissed) who was found to have made an abusive use of his rights and privileges as being the then AFRINIC’s hostmaster. Further, the said former employee was even found to have misappropriated IP number resources forming part of AFRINIC’s own pool of resources to the benefit of a private company owned and controlled by the latter himself, and which in turn engaged in sale transactions of the impugned resources to third parties. This matter has also been reported to the Mauritian Central Criminal Investigation Division and an enquiry is presently on-going.

Thereafter, based on the extent of the findings of both the initial internal investigation and the APNIC’s investigation, AFRINIC, consistent with its obligation to maintain its WHOIS Database accuracy, set up a permanent audit mechanism and hence this report.

## 6 Scope

The scope of the permanent audit mechanism conducted in 2020 is as follows:

1. Investigating IPv4 resources known or suspected to have been misappropriated from AFRINIC's pool;
2. Investigating the rightful custodianship of Legacy IPv4 resources falling under the jurisdiction of AFRINIC;
3. Investigating AFRINIC's inventory of available, delegated, and legacy space(IPv4) since 2005 and subsequent replenishment of AFRINIC managed IP resources;
4. Verifying that all Resource Members underwent the normal registration process for membership;
5. Verifying that all Resource Members submitted resource request(s) for all the resources they hold;
6. Making such recommendations on how the existing WHOIS Database and MyAFRINIC features could be improved.

## 7 Methodology

For the purposes of the aforesaid audit exercise, the following methodology was adopted namely primary and secondary collection of data.

In regard to primary data, the following was used:

1. MyAFRINIC (AFRINIC registry) and the AFRINIC WHOIS Database logs and history for the:
  - a. IPv4 address block in question
  - b. Organisation to which these IPv4 addresses were and are delegated to
  - c. Contact information (administrative and technical)
  - d. Maintainers that allowed the holders to manage these resources
2. AFRINIC delegated and delegated extended stats files
3. Tickets logged on AFRINIC ticketing system (in which support was requested by the organisation contacts , membership and resource requests)
4. Use of AFRINIC services (reverse DNS, IRR)

Secondary data included information obtained:

1. through third parties including media publication
2. relevant information gathered from AFRINIC's public mailing lists and whistleblowers
3. ARIN WHOIS records
4. InterNIC files (applicable for legacy)
5. windeed reports for organisation and contacts(applicable only to South Africa)
6. other RIRs delegated stats

## 8 Findings

### 8.1 Resources misappropriated from AFRINIC Pool

AFRINIC holds an inventory of all the Internet Number Resources that it administers. Appendix A1 summarises the AFRINIC pool replenishment since 2005. In addition to this pool of resources, AFRINIC also administers those resources attributed to organisations in its service region by other RIRs that migrated to its WHOIS Database in 2005. AFRINIC maintains internal Resource Files for its inventory management. The extended delegated stats file published daily by AFRINIC since October 2012 gives an overview of the AFRINIC inventory (whether the resources are delegated, available or reserved).

The table below provides details of the organisations that were primarily concerned with the audit exercise and the outcome thereof, including where appropriate the status of audit in regard to specific organisations:



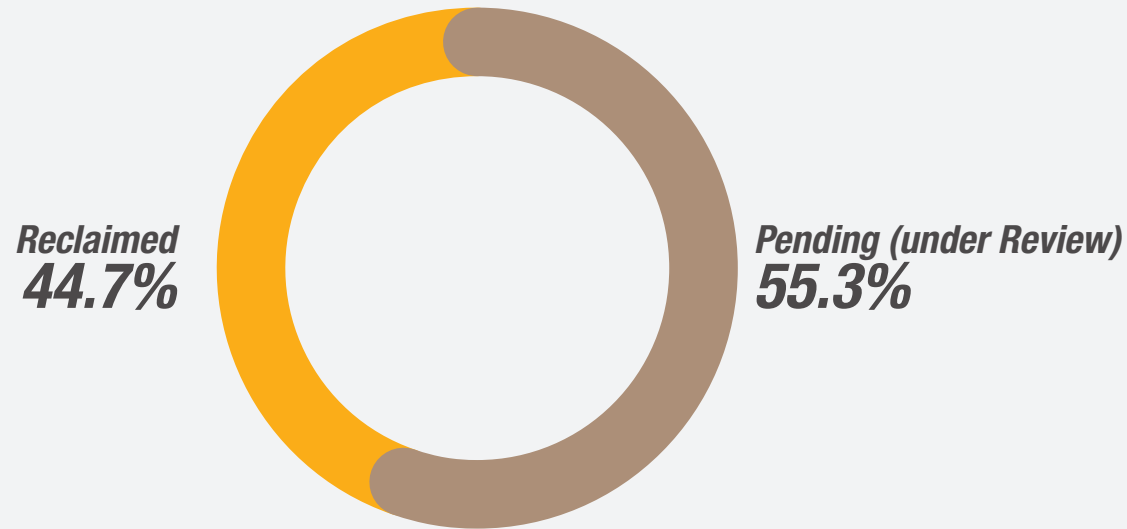
Table 1 - Misappropriated resources and Status

IPv4 address block	Organisation Name holding the IPv4 address @Dec 2019	Org-hdl of organisation holding the IPv4 address@Dec 2019	Was the IPv4 address in the AFRINIC pool or delegated to a Historical owner?	Organisation Name of historical owner @2007	ORG-HDL of historical owner @2007	Organisation Name holding the IPv4 address@Nov 2020	ORG_HDL of organisation holding the IPv4 address@Nov 2020	Status@ 17 Dec 2020	Count of IP addresses	Date of reclamation
165.52.0.0/14	CGHB	ORG-ZZ23-AFRINIC	AFRINIC Pool	Not applicable	Not applicable	Now in AFRINIC Pool (quarantine)	ORG-ZZ23-AFRINIC	Reclaimed	262144	Feb-20
160.184.0.0/16	CGHB	ORG-ZZ23-AFRINIC	AFRINIC Pool	Not applicable	Not applicable	Now in AFRINIC Pool (quarantine)	ORG-ZZ23-AFRINIC	Reclaimed	65536	Feb-20
137.171.0.0/16	CGHB	ORG-ZZ23-AFRINIC	AFRINIC Pool	Not applicable	Not applicable	Now in AFRINIC Pool (quarantine)	ORG-ZZ23-AFRINIC	Reclaimed	65536	Feb-20
168.211.0.0/16	CGHB	ORG-ZZ23-AFRINIC	AFRINIC Pool	Not applicable	Not applicable	Now in AFRINIC Pool (quarantine)	ORG-ZZ23-AFRINIC	Reclaimed	65536	Feb-20
213.247.0.0/19	CGHB	ORG-ZZ23-AFRINIC	AFRINIC Pool	Not applicable	Not applicable	Now in AFRINIC Pool (quarantine)	ORG-ZZ23-AFRINIC	Reclaimed	8192	Feb-20
160.255.0.0/16	Link Data Group	ORG-ZZ139-AFRINIC	AFRINIC Pool	Not applicable	Not applicable	Now in AFRINIC Pool (quarantine)	ORG-ZZ139-AFRINIC	Reclaimed	65536	Feb-20
160.181.0.0/16	Link Data Group	ORG-ZZ139-AFRINIC	AFRINIC Pool	Not applicable	Not applicable	Now in AFRINIC Pool (quarantine)	ORG-ZZ139-AFRINIC	Reclaimed	65536	Feb-20
196.192.192.0/18	Link Data Group	ORG-ZZ139-AFRINIC	AFRINIC Pool	Not applicable	Not applicable	Now in AFRINIC Pool (quarantine)	ORG-ZZ139-AFRINIC	Reclaimed	16384	Feb-20
196.207.64.0/18	Link Data Group	ORG-ZZ139-AFRINIC	AFRINIC Pool	Not applicable	Not applicable	Now in AFRINIC Pool (quarantine)	ORG-ZZ139-AFRINIC	Reclaimed	16384	Feb-20
196.62.0.0/16	Link Data Group	ORG-ZZ139-AFRINIC	AFRINIC Pool	Not applicable	Not applicable	Now in AFRINIC Pool (quarantine)	ORG-ZZ139-AFRINIC	Reclaimed	65536	Feb-20

196.45.112.0/20	ITC	ORG-AI2-AFRINIC	AFRINIC Pool	Not applicable	Not applicable	Now in AFRINIC Pool (quarantine)	ORG-AI2-AFRINIC	Reclaimed	4096	Feb-20
196.194.0.0/15	ITC	ORG-AI2-AFRINIC	AFRINIC Pool	Not applicable	Not applicable	Now in AFRINIC Pool (quarantine)	ORG-AI2-AFRINIC	Reclaimed	131072	Feb-20
196.193.0.0/16	ITC	ORG-AI2-AFRINIC	AFRINIC Pool	Not applicable	Not applicable	Now in AFRINIC Pool (quarantine)	ORG-AI2-AFRINIC	Reclaimed	65536	Feb-20
196.246.0.0/16	ITC	ORG-AI2-AFRINIC	AFRINIC Pool	Not applicable	Not applicable	Now in AFRINIC Pool (quarantine)	ORG-AI2-AFRINIC	Reclaimed	65536	Feb-20
196.63.0.0/16	ITC	ORG-AI2-AFRINIC	AFRINIC Pool	Not applicable	Not applicable	Now in AFRINIC Pool (quarantine)	ORG-AI2-AFRINIC	Reclaimed	65536	Feb-20
196.42.128.0/17	ITC	ORG-AI2-AFRINIC	AFRINIC Pool	Not applicable	Not applicable	Now in AFRINIC Pool (quarantine)	ORG-AI2-AFRINIC	Reclaimed	32768	Feb-20
196.199.0.0/16, 196.196.0.0/16, 196.56.0.0/16 , 196.57.0.0/16 ,196.58.0.0/16 ,196.59.0.0/16, 196.240.0.0/15 , 196.242.0.0/15, 196.244.0.0/16, 196.245.0.0/16, 196.247.0.0/16, 196.48.0.0/16, 196.197.0.0/16 & 196.198.0.0/16,	Fiber Grid Inc	ORG-FGI1-AFRINIC	AFRINIC Pool	Not applicable	Not applicable	Fiber Grid Inc	ORG-FGI1-AFRINIC	Pending (Under Review)	1048576	
196.52.0.0/14	LogicWeb Inc	ORG-LW11-AFRINIC	AFRINIC Pool	Not applicable	Not applicable	LogicWeb Inc	ORG-LW11-AFRINIC	Pending (Under Review)	262144	

Based on the above, it was revealed that 2,371,584 IPv4 addresses were misappropriated from *AFRINIC's* pool of resources and attributed to organisations without any justification.

## ***Count of Misappropriated IP addresses***



Accordingly, as from 17 December 2020, the following data are worth noting:

1. A total of 1,060,864 IPv4 resources have been reclaimed, i.e deregistered from the AFRINIC WHOIS Database since February 2020 and are presently in 'quarantine' for a period of 12 months, and thereafter, the said resources may be added to AFRINIC's pool of resources available for new allocations;
2. A total of 1,310,720 IPv4 resources are yet to be reclaimed due to ongoing diligence being carried out.

In some cases, it has also been revealed that resources that ought to form part of AFRINIC's pool had, without any lawful authority and/or justification, been tagged as purported legacy resources prior to becoming the subject of sale transactions. In fact, AFRINIC has even been communicated with copies of such sale transactions. Be it as it may, AFRINIC contends that the current holder of those resources cannot, as a matter of law, be the rightful custodian of these resources for the simple reason that those concerned organisations are deemed in possession of 'stolen' IP number resources. It is worth adding that this aspect of the matter also forms part of the on-going police investigation.

### 8.1.1 Risks associated with the reclamation exercise

No action is risk-free. Likewise, the actions undertaken by AFRINIC has, so far, led to one application for an Interim Injunction jointly lodged against AFRINIC by Afri Holdings Ltd, Netstyle A. Ltd, and one Mr. Elad Cohen before the Hon. Judge in Chambers of the Mauritian Supreme Court viz Cause Number SC/COM/WRT/000295/2020.

The gist of the aforesaid application is to require AFRINIC to reinstate those resources reclaimed by AFRINIC to the purported aggrieved parties as well as aiming at prohibiting AFRINIC from pursuing with its reclaiming and reversing exercise, as the case may be. We find it apt to add that, at the time of publishing the report, the application for injunction is still pending before the Hon. Judge in Chambers.

### 8.1.2 Reclaimed resources currently under quarantine

Since there is an ongoing court case, subject to legal advice, the quarantine period may be extended beyond the 12 months. Approval from the CEO/Legal team is therefore required before these resources are moved to the available pool. Appropriate internal control mechanisms have to be implemented.

### 8.1.3 Further verifications conducted in regard to misappropriation of resources

Since it was noted that some IPv4 addresses that were misappropriated were listed in the list of various registry space (holes) that AFRINIC received at the end of the redistribution exercise in the year 2010, a verification was conducted to determine if there were additional IPv4 addresses that could have been misappropriated. None were found.

## 8.2 Legacy resources under investigation

### 8.2.1 Legacy Resource

In December 1997, when the American Registry for Internet Numbers (ARIN) was formed, it inherited the InterNIC database of distributed IPv4 addresses and Autonomous System Numbers (ASNs) and the responsibility to maintain the records was conferred to the latter. These records became known as “early registrations” (or legacy address space). Following consultations held amongst the then RIRs, it was agreed that the interests of the holders of these resources shall be preserved by the RIRs operating in the service region where these resources were in use.

It is worth mentioning that the other RIRs were set up at different times and therefore the parameters for classifying these resources as legacy are different and where in doubt, AFRINIC ensures that appropriate queries are made to the other RIRs.

Upon its inception in 2005, AFRINIC received the legacy resources and holdership information from the other RIRs that were in use in its service region. These resources are registered in the AFRINIC WHOIS Database and the holders use the Internet Routing Registry and reverse DNS services that AFRINIC offers to its Resource Members.

It is also worth noting that Legacy Resource holders do not have a contractual agreement with AFRINIC, but nevertheless benefit from AFRINIC’s services free of charge.

The extended delegated stats file published daily by AFRINIC also includes the IPv4 and Autonomous System Numbers (ASN) resources that hold legacy status.

Whereupon Legacy Resource holders are required to update their records on AFRINIC’s WHOIS Database, a formal request is made and the usual due diligence will apply.

Based on information available at AFRINIC and implemented on the MyAFRINIC portal, the criteria to identify those legacy resources exist and ensure that Resource Members that hold some resources with legacy status are not billed for these and that organisations that hold resources with legacy resources only are not categorised as Resource Members.

In 2019, the detection of the cases where resources misappropriated from the AFRINIC pool were given the legacy status, reinforced the need for continuous audits in regard to the resources with legacy status and their holders. There have been further queries from AFRINIC’s Community in regard to some changes that happened in the WHOIS Database for some IPv4 addresses that were migrated in 2005 with legacy status. This report will also provide clarification on these cases.

In regard to legacy resources, the present audit revealed as follows:

1. 1,799,168 IP addresses which were correctly labelled as legacy address space appeared to have been compromised.

**The table below provides an overview and summarises the outcome of the investigation in regard to legacy resources that could have been compromised.**

Table 2 - Compromised Legacy IPv4 Resources & status

IPv4 address	Organisation Name holding the IPv4 address @Dec 2019	Org-hdl of organisation holding the IPv4 address@Dec 2019	Was the IPv4 address in the AFRINIC pool or delegated to a Historical owner?	Organisation Name of historical owner @2007	ORG-HDL of historical owner @2007	Organisation Name holding the IPv4 address@Nov 2020	ORG_HDL of organisation holding the IPv4 address@Nov 2020	Status@17 Dec 2020	Reason for Status	Count of IP addresses
196.16.0.0/14	Infoplan	ORG-IA41-AFRINIC	Historical owner	Infoplan	ORG-IA41-AFRINIC	Network and Information Technology Limited	ORG-IA41-AFRINIC	Pending	status quo pending determination of rightful custodianship	262144
196.4.36.0/22			Historical owner					1024		
196.4.40.0/22			Historical owner					1024		
196.4.44.0/23			Historical owner					512		
168.206.0.0/16	The Atomic Energy Board	ORG-TAEB1-AFRINIC	Historical owner	The Atomic Energy Board	ORG-TAEB1-AFRINIC	The Atomic Energy Board	ORG-TAEB1-AFRINIC	Under dispute	status quo pending determination of rightful custodianship	65536
196.10.64.0/19	Nampak	ORG-ZZ154-AFRINIC	Historical owner	Nampak	ORG-ZZ154-AFRINIC	Nampak Management Services	ORG-ZZ154-AFRINIC	Reversed	Changes have been reversed and IPv4 address/organisation locked	8192
196.10.61.0/24			Historical owner					256		
196.10.62.0/23			Historical owner					512		
160.121.0.0/16	Mega Plastics (Pty) Ltd	ORG-MPL1-AFRINIC	Historical owner	Mega Plastics (Pty) Ltd	ORG-MPL1-AFRINIC	Mega Plastics (Pty) Ltd	ORG-MPL1-AFRINIC	Pending	status quo pending determination of rightful custodianship	65536
155.235.0.0/16	Afrox MIS	ORG-AM1-AFRINIC	Historical owner	Afrox MIS	ORG-AM1-AFRINIC	African Oxygen Limited	ORG-AM1-AFRINIC	Reversed	African Oxygen Limited passed due diligence checks for information update	65536
168.80.0.0/15	AECI Information Services in South Africa	ORG-AISL1-AFRINIC	Historical owner	AECI Information Services in South Africa	ORG-AISL1-AFRINIC	AECI Information Services (Pty) Ltd	ORG-AISL1-AFRINIC	Pending	status quo pending determination of rightful custodianship	131072

160.116.0.0/16	Affiliated Computing Services (Pty) Ltd	ORG-ACSL2-AFRINIC	Historical owner	Affiliated Computing Services (Pty) Ltd	ORG-ACSL2-AFRINIC	Affiliated Computing Services (Pty) Ltd	ORG-ACSL2-AFRINIC	Pending	status quo pending determination of rightful custodianship	65536
155.159.0.0/16	Safren Computer Services	ORG-SCS1-AFRINIC	Historical owner	Safren Computer Services	ORG-SCS1-AFRINIC	Safren Computer Services	ORG-SCS1-AFRINIC	Pending	status quo pending determination of rightful custodianship	65536
164.155.0.0/16	Sentrachem Limited	ORG-SL72-AFRINIC	Historical owner	Sentrachem Limited	ORG-SL72-AFRINIC	Sentrachem Limited	ORG-SL72-AFRINIC	Pending	status quo pending determination of rightful custodianship	65536
163.197.0.0/16	Anglo American	ORG-AA78-AFRINIC	Historical owner	Anglo American	ORG-AA78-AFRINIC	Anglo American	ORG-AA78-AFRINIC	Pending	status quo pending determination of rightful custodianship	65536
196.15.64.0/18	Trafex	ORG-ZZ21-AFRINIC	Historical owner	Trafex	ORG-ZZ21-AFRINIC	Trafex	ORG-ZZ21-AFRINIC	Pending	status quo pending determination of rightful custodianship	16640
192.96.148.0/24										
163.198.0.0/16	Agrihold	ORG-AA79-AFRINIC	Historical owner	Agrihold	ORG-AA79-AFRINIC	Agrihold	ORG-AA79-AFRINIC	Pending	status quo pending determination of rightful custodianship	65536
164.88.0.0/16	Argus Holdings	ORG-AHL1-AFRINIC	Historical owner	Argus Holdings	ORG-AHL1-AFRINIC	Argus Holdings	ORG-AHL1-AFRINIC	Reversed	Changes have been reversed and IPv4 address/organisation locked	65536
168.76.0.0/16	Free State Education Department	ORG-FSED1-AFRINIC	Historical owner	Free State Education Department	ORG-FSED1-AFRINIC	Free State Education Department	ORG-FSED1-AFRINIC	Pending	Due diligence not yet concluded	65536

192.96.146.0/24	CGHB	ORG-ZZ23-AFRINIC	Historical owner	CGHB	ORG-ZZ23-AFRINIC	Nedbank Limited	ORG-ZZ23-AFRINIC	Consolidated	Nedbank Limited passed due diligence checks for information update	256
198.54.232.0/24	LINKDATA	ORG-ZZ139-AFRINIC	Historical owner	LINKDATA	ORG-ZZ139-AFRINIC	Link Data Group	ORG-ZZ139-AFRINIC	Reversed	Changes have been reversed and IPv4 address/organisation locked	
165.231.0.0/16	Fiber Grid Inc	ORG-AI2-AFRINIC	Historical owner	Afriq Access	ORG-AI2-AFRINIC	Fiber Grid INC	ORG-FGI1-AFRINIC	Pending	Awaiting Fiber Grid's response	65536
155.237.0.0/16	Sasol (GID)	ORG-SA58-AFRINIC	Historical owner	Sasol (GID)	ORG-SA58-AFRINIC	Sasol South Africa (PTY) LTD	ORG-SA58-AFRINIC	Reversed	Sasol South Africa (PTY) LTD passed due diligence checks for information update	65536
169.129.0.0/16			Historical owner					Reversed		65536
160.122.0.0/16	Tredcor	ORG-TL1-AFRINIC	Historical owner	Tredcor (Pty) Ltd	ORG-TL1-AFRINIC	Trentyre (Pty) Ltd	ORG-TL1-AFRINIC	Reversed	Trentyre (Pty) Ltd passed due diligence checks for information update	65536
160.115.0.0/16	Columbus Stainless	ORG-ZZ8-AFRINIC	Historical owner	Columbus Stainless	ORG-ZZ8-AFRINIC	Columbus Stainless (Proprietary) Limited	ORG-ZZ8-AFRINIC	Reversed	Columbus Stainless (Proprietary) Limited passed due diligence checks for information update	65536
196.3.112.0/22	Netconnect South Africa	ORG-NSA1-AFRINIC	Historical owner	Netconnect South Africa	ORG-NSA1-AFRINIC	NetConnect cc	ORG-ZZ176-AFRINIC	Consolidated	NetConnect CC passed due diligence checks for information update	1024



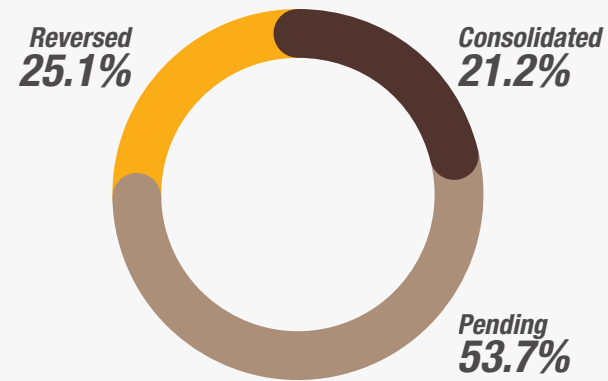
163.201.0.0/16	Syfrets	ORG-SA59-AFRINIC	Historical owner	Syfrets	ORG-SA59-AFRINIC	Nedbank Limited	ORG-NBL1-AFRINIC	Reversed	Nedbank Limited passed due diligence checks for information update	65536
165.25.0.0/16	Directorate of Information Services	ORG-DoIS1-AFRINIC	Historical owner	Directorate of Information Services	ORG-DoIS1-AFRINIC	City of Cape Town	ORG-COCT1-AFRINIC	Consolidated	City of Cape Town passed due diligence checks for information update	65536
152.108.0.0/16	Transnet	ORG-TA26-AFRINIC	Historical owner	Transnet	ORG-TA26-AFRINIC	Liquid Telecoms Operations Limited	ORG-LTOL1-AFRINIC	Consolidated	Liquid Telecoms Operations Limited passed due diligence checks for information update	65536
163.199.0.0/16	NBS Bank	ORG-NBL1-AFRINIC	Historical owner	NBS Bank	ORG-NBL1-AFRINIC	Nedbank Limited	ORG-NBL1-AFRINIC	Consolidated	Nedbank Limited passed due diligence checks for information update	65536
165.3.0.0/16	Wooltru		Historical owner	Wooltru		Woolworths Holdings Limited		Consolidated		65536
165.4.0.0/16		ORG-WA1-AFRINIC					ORG-WA1-AFRINIC	Consolidated		65536
165.5.0.0/16								Consolidated		65536

‘Consolidated’ in the above cases implies a scenario where IP resources are moved from a subsidiary entity to a parent/ holding entity. In such instances, AFRINIC undertakes its due diligence to ensure that there is a valid paper trail on record, thus establishing the relationship between the entities involved.

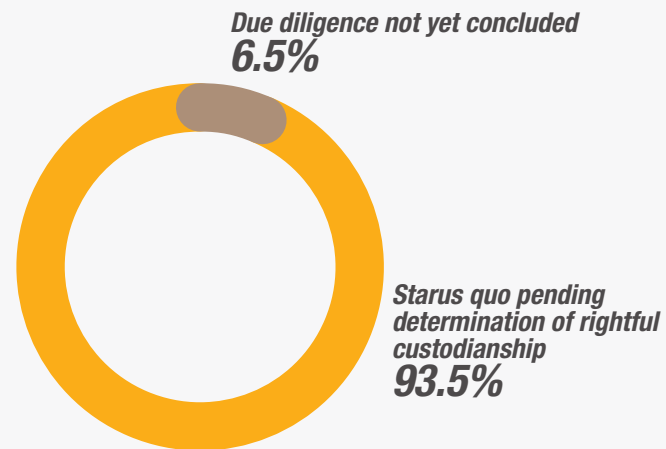
‘Pending’ in the above cases implies that the resources are either under dispute regarding their rightful custodianship or undergoing due diligence.

‘Reversed’ in the above cases implies that AFRINIC reversed the changes that were effected on the resources and related WHOIS objects.

### *Status of compromised legacy IPv4 addresses*



### *Pending Cases and Reasons*



The analysis of the records related to these IPv4 addresses and correspondence with the resource holders brought to light the following elements:

1. Dormant resources (i.e. those resources not visible in routing tables) were mainly targeted;
2. Holders of the resources may also be defunct;
3. Some legacy resources appeared to have changed hands several times and that without informing AFRINIC;
4. Email domains were also transferred as part of the 'sale' of IPv4 resources, thus rendering it almost impracticable to contact the initial source holder;
5. Outdated or lack of contact information for most holders of legacy resources, notably the records were transferred from ARIN without email addresses and phone numbers;
6. Maintainer passwords also appeared to have been handed over to subsequent buyers, AFRINIC's validation has so far indicated that out of 9 maintainers passwords listed and all 9 passwords were incorrect;
7. The privileged status attributed to holders of legacy resources have made it less encouraging for buyers of IPv4 legacy resources to sign a Registration Services Agreement with AFRINIC;
8. In most cases, details of the organisational administrative/technical contacts appearing its WHOIS Database are no longer in employment with the organisations concerned;
9. Some holders of legacy resources appeared to have undergone a change of name so that it is no longer practicable to trace down the concerned organisations;
10. As per WHOIS historical records, some of these contacts, between 2012 and 2015 had been updated with emails bearing domain names that matches the organisation holding the resources, the evaluation and validation process could establish that these domains were recently registered and could not align with the length of time the organisation has held the resources for.

AFRINIC acknowledges that the rate of reversals i.e. reinstating the records in the AFRINIC WHOIS Database to its status immediately prior to the purported unauthorised changes occurred has been very slow. In fact, a fair proportion of these resources have a 'Pending' status and the reason being that the custodianship of these resources are being claimed by more than one organisations, thus giving rise to a dispute in respect thereof. Consequently, and pending the determination of the rightful custodianship of these resources either between the disputants and/or a competent authority, these IPv4 addresses have been kept 'locked' and no further changes can be effected on the WHOIS database. It is thus in the interests of the disputants to resolve their custodianship issue at the earliest possible.

Furthermore, there are cases where AFRINIC did not receive any response to its requests for updates of information appearing on its WHOIS Database. In such cases, more so in the absence of an objection thereto, all suspected updates have been reversed and these IPv4 addresses have also been 'locked' in the WHOIS Database until such time that the legitimate holder contacts AFRINIC and passes all due diligence checks.

## 8.2.2 Risks associated with the reversal exercise

While the reversals and consolidations exercise were conducted by AFRINIC following a strict due diligence procedure, yet there is nothing that prevents an aggrieved party from initiating such legal actions against AFRINIC. The risk is real and for this reason, AFRINIC has adopted the following approach:

1. AFRINIC has made sure that all registered contacts appearing in the registration records have been contacted and informed of AFRINIC's findings and planned action prior to updating the records; and
2. Where two or more parties have claimed custodianship over the same IPv4 resource, no request updates are entertained. In fact, in all cases where a dispute is either evident or apparent, an annotation has been added in the affected IPv4 address registered to ensure that all stakeholders are fully aware of same. The annotation is as follows:

```
remarks: =====REMARK=====
remarks: The custodianship of this IP prefix is presently
remarks: deemed to be in dispute. Consequently,
remarks: no change request pertaining to this particular
remarks: prefix will be entertained by AFRINIC until the
remarks: issue is finally resolved between the disputants
remarks: themselves or by a competent authority.
remarks: Further, whilst the current holder of the said prefix
remarks: continues to hold same, AFRINIC shall bear no
remarks: responsibility whatsoever in relation thereto and
remarks: disputants are encouraged to resolve the said
remarks: dispute expeditiously.
remarks: =====REMARK=====
```

The cases where a dispute arose are as follows:

1. ORG-WA1-AFRINIC - Wooltru - 165.3.0.0/16, 165.4.0.0/16 and 165.5.0.0/16 - The disputants managed to resolve their issue of custodianship and thereafter, AFRINIC updated its records accordingly.
2. ORG-TAEB1-AFRINIC - The Atomic Energy Board - 168.206.0.0/16 - The matter is still pending and the block of IPv4 addresses has been 'locked' pending determination of the dispute.

## 8.2.3 Other observations

1. In 2005, legacy resources were migrated to the AFRINIC WHOIS Database from the other RIRs WHOIS Databases. The verification also highlighted the following blocks of IPv4 addresses that were misappropriated from AFRINIC pool, notably 196.48.0.0/16, 196.52.0.0/14, 196.197.0.0/16, 196.198.0.0/16 and given legacy status.
  2. Some blocks of IPv4 addresses, notably 192.96.0.0/16, 198.54.0.0/16, 196.6.0.0/16, 196.10.0.0/16, 196.11.0.0/16 and 196.13.0.0/16 migrated to AFRINIC whois database in February 2005. These blocks of IPv4 addresses had the WHOIS status set to ALLOCATED PA and their usage were recorded as ASSIGNED PA. The custodian of these resources was the UNINET Project. In August 2005, the organisation whose predecessor was the UNINET project indicated to AFRINIC that they would like to return the aforementioned /16 block of IPv4 addresses. Consequently the following actions were taken by AFRINIC:
    - a. AFRINIC created organisation objects with the holdership information (name, address, telephone number and contacts, where available) to get their Organisation ID (ORG-HDL).
    - b. Some IP addresses in these blocks of IPv4 addresses were in use and assigned to organisations domiciled in South Africa on the AFRINIC WHOIS Database. These IPv4 addresses were updated on the WHOIS Database to have the status “ASSIGNED PI” and tagged with the Organisation ID (ORG-HDL).
    - c. These IPv4 addresses retained the legacy status of their parent /16.
    - d. AFRINIC then deleted the IPv4 blocks of IPv4 addresses 192.96.0.0/16, 198.54.0.0/16, 196.6.0.0/16, 196.10.0.0/16, 196.11.0.0/16 and 196.13.0.0/16 from its WHOIS Database.
    - e. The IPv4 addresses that were not delegated to any organisation in 196.6.0.0/16, 196.10.0.0/16, 196.11.0.0/16, 196.13.0.0/16 were then marked as available in the AFRINIC Pool and delegated to its Resource Members in accordance with the policies in place.
  3. The number of Legacy Resource Holders in the AFRINIC service region increased after the registration of the smaller blocks of IPv4 address to their actual users in the AFRINIC WHOIS Database, after the conclusion of this exercise.
  4. Not all the 65,536 IPv4 addresses of the 192.96.0.0/16 and 198.54.0.0/16 IPv4 addresses are registered in the AFRINIC WHOIS Database. Some of these IP addresses are managed by another RIR, notably ARIN as a result of the redistribution of various registry space between all five RIRs.
  5. The analysis of records highlighted some changes as follows in regard to some resources that either:
    - a. lost their legacy status, e.g in a transfer to the organisation actually using the resources or, in case where a request was received for the WHOIS status of the resources to be change; or
    - b. do not hold legacy status, while their WHOIS records mention a date before 1998-01-01 - These IPv4 addresses were migrated from the RIPE NCC database and did not hold legacy status at the time of the migration.
- These are summarised below:

/8 containing the IPv4 address	Were variations observed?	Has variation been explained ?	Summary of the analysis
84/8	Yes	Yes	<p>ripencclEGlipv4 84.205.96.0 8192 20041111 assigned</p> <p>afrinicEGlipv4 84.205.96.0 8192 19900411 assigned F36ADE80</p> <p><a href="https://www.ripe.net/manage-ips-and-asns/legacy-resources/erx/transferred-resources#pi">https://www.ripe.net/manage-ips-and-asns/legacy-resources/erx/transferred-resources#pi</a></p> <p>Organisation holding these resources is a billable Resource Member</p>
147/8	Yes	Yes	A ticket is available on AFRINIC Ticketing system in which the IPv4 address 147.110.0.0/16 which held legacy status was moved to Eskom Holdings
160/8	Yes	Yes	A ticket is available on AFRINIC Ticketing system in which the IPv4 address 160.117.0.0/16 which held legacy status in 2005 lost its legacy status and registered under the Resource Member ORG-TSBO2-AFRINIC
168/8	Yes	Yes	A ticket is available on AFRINIC Ticketing system in which the IPv4 address 168.167.0.0/16 initially assigned to University of Botswana (ORG-UoB1-AFRINIC) was transferred to Resource Member ORG-BTC1-AFRINIC
192/8	Yes	Yes	192.96.0.0/16 . Some orgs with ORG-HDL ORG-ZZ^& contain delegations dated after 2000 . Appendix A2 holds the details
193/8	Yes	Yes	Resources originated from RIPE NCC WHOIS Database and did not hold legacy status. All organisations are AFRINIC Resource Members as per MyAFRINIC and have been invoiced membership fees . Appendix A3 holds the details
195/8	Yes	Yes	195.166.224.0/19 was migrated from RIPE NCC WHOIS database and was allocated to a Resource Member. Reclaimed in 2014 and issued in 2020 .
196/8	Yes	Yes	<p>Appendix A4 holds the details of administration and delegation of IPv4 addresses in</p> <p>196.6.0.0/16</p> <p>196.10.0.0/16</p> <p>196.11.0.0/16</p> <p>196.13.0.0/16</p>
198/8	Yes	Yes	The administration & registration of the IPv4 addresses in 198.54.0.0/16 in this IPv4 address are documented. (Appendix A5 gives an overview)
209/8	Yes	Yes	209.212.96.0/19 holds legacy status

### 8.3 Verification that each Resource Member underwent a registration process

AFRINIC records were consulted in order to assess whether:

The registration process is documented at <https://afrinic.net/become-member#steps>



1. Each IPv4 resource delegated to an AFRINIC Resource Member was documented.

9 out of 2824 IPv4 address prefixes' records checked for the period 2005 to 2019 did not have a ticket number and these IPv4 addresses have been allocated to Fiber Grid Inc during the period of 2012-2013 and for which an investigation is ongoing.

2. The documented record of each IPv4 address contained a valid request for the blocks of IPv4 address. The verification of 2815 blocks of IPv4 addresses' documentation was carried out. For 2800 blocks of IPv4 addresses, the ticket numbers contained a resource request that was subsequently evaluated. Inconsistencies were detected for 15 blocks of IPv4 addresses that had been imported from the other RIRs' databases as part of the ERX Project.

## 9 Actions taken by AFRINIC

### 9.1 Communication

AFRINIC embarked upon a communication strategy using monthly email updates and blog articles to keep its stakeholders, notably its Resource Members and Legacy Resource Holders in its service region informed about the situation so that all concerned organisations may then take such appropriate actions at their end to protect the custodianship of the resources they hold.

AFRINIC is of the considered view that this strategy has proved to be effective in as much as a significant number of its stakeholders have shown an interest in the need to update their records, as well as to protect their legal interests in their related IPv4 resources.

### 9.2 Existing control mechanisms

Continuous improvements have been made to ensure that proper controls are in place for the management of Internet Number Resources, which is the core business of *AFRINIC*. This section covers the mechanisms that are in place and reviewed from time to time to enable *AFRINIC* to mitigate such risks that pertain to its core function.

#### 9.2.1 Process

Continuous risk assessments and subsequent improvements have been made to the membership and resource evaluation process used by AFRINIC Registration Services staff in order to mitigate the risks of collusion and misappropriation. Automation of some of the process steps have been implemented to reduce the incidence of both human error and abuse of rights. A change control policy will be introduced to add additional checks and balances. It will also ensure that there is traceability for changes to Number Resources records. All resource and membership requests henceforth undergo a final review by a senior staff member before the invoice is issued.

#### 9.2.2 Fraud and Corruption Policy

In June 2019, AFRINIC adopted a fraud and corruption policy and staff are required to strictly adhere to same.

#### 9.2.3 Whistleblower mechanism

A whistleblower platform hosted by an independent provider, EthicsPoint was launched in June 2020 and is available at <https://afrinic.net/whistleblowing>. Both staff and members of the community are encouraged to report malpractices or instances where they believe there might have been violations of AFRINIC policies or standards.



## 9.2.4 AFRINIC Business Rules

The internal business rules that govern how AFRINIC shall provide support to the Legacy Resource holders in its service region have been reinforced to ensure that proper verification of holdership are conducted before any updates are made to the records on the AFRINIC WHOIS Database.

In the case of AFRINIC Resource Members, the latter has to meet the checks in regard to compliance with AFRINIC's Internal business process and policies that include; amongst others, the requirement that only registered contacts are allowed to request for service support, verification of the domain names registration information, cross-verifying of company registration information where applicable services are available.

## 9.2.5 Training

Senior staff members managing the registry services handle requests pertaining to updates of the legacy resources and Legacy Resource Holders information. Training of other staff members in the registry services is ongoing to ensure that all team members are capable of diligently evaluating the requests and also able to identify any risks involved. Suspicious activities are examined and the subject of thorough discussion in the teams to create awareness for all support staff members.

## 9.2.6 Use of passwords

Staff authorised to perform changes to records on MyAfrinic and WHOIS databases authenticate such changes using their PGP key. Power maintainers only use PGP authentication.

All Resource Holders are formally instructed to adopt secure password mechanisms.

## 9.2.7 Systems privileges

Staff members shall be given qualified access to AFRINIC systems in accordance with their roles and duties. Updates that cannot be done using the privileges and interfaces available to Registration Services staff are directed to the Database Manager for processing, upon the approval of the Manager or Head of Department.

## 9.2.8 WHOIS

Since August 2017, AFRINIC has ensured that all objects in its WHOIS Database are protected by a maintainer (auto-generated for person and role objects).

## 9.2.9 Monitoring

1. Daily Inconsistency reports between MyAFRINIC versus WHOIS are generated and include:
  - a. - Objects appearing on MyAFRINIC but not on WHOIS
  - b. - Objects where either the ORG-HANDLE or STATUS does not match

The list of inconsistencies are attached to the report

2. Daily Inconsistency reports between WHOIS versus MyAFRINIC are generated and include:
  - a. Objects appearing on WHOIS but not on MyAFRINIC
  - b. Objects where either the ORG-HANDLE or STATUS does not match

The list of inconsistencies are attached to the report

3. Resource file entries versus AFRINIC delegated extended stats file

Registration Services Team are informed when inconsistencies are detected between the resource file entries and the registry database.

## 10 Recommendations

### 10.1 Database Accuracy

AFRINIC databases hold information about resource holders in its service region. These holders are categorised as Resource Members and the holders of legacy resources. Resource Members are bound by the Registration Services Agreement and have thus the duty to provide and ensure accurate contact information are stored in AFRINIC databases (WHOIS and MyAFRINIC).

Legacy Resource Holders do not have any contractual agreement with AFRINIC. Since the time these organisations were migrated to AFRINIC, very few have requested for an update of contact or organisational information from AFRINIC. It is also likely that some of these organisations are unaware that they are considered as holders of IPv4 resources. Others may have become defunct or have undergone business restructuring and their contact persons information outdated as they have either retired or simply no longer work for the organisation. The audit has also revealed that in cases where legacy IPv4 resources appeared to have been disposed to a purported purchaser, the purported transaction has also catered for the transfer of maintainer passwords.

1. It is thus recommended that all Resource Members keep their contact information updated.
2. It is recommended that organisations ensure that their details appearing on AFRINIC's WHOIS Database are kept up to date all times.
3. It is recommended that AFRINIC devote resources to ensure that Legacy Resource Holders' requests are attended to within the service timelines.

### 10.2 Community input

The other RIRs have embarked on several activities targeting legacy resource holders, such as encouraging them to:

1. come under contract and benefit from additional services,
2. update their contact information in the RIR database,
3. update the holdership information of the resources, without relinquishing their rights to these legacy resources. This approach has benefited both the RIRs (in terms of the accuracy of their registry data) and the Legacy Resource Holders (less chance of their resources being hijacked). Some RIRs even have policies regarding legacy/historical resources.

The current situation affecting Legacy Resource Holders at AFRINIC can be redressed with the support of its community. It is therefore recommended that the AFRINIC community critically assess how best the accuracy of the information pertaining to Legacy Resource Holders can be improved and consider whether unused legacy resources should be left idle while AFRINIC exhausts its remaining pool of IPv4 addresses.

APNIC

<https://www.apnic.net/community/policy/resources#4.2.1.-Recovery-of-unused-historical-resources>

RIPE NCC

<https://www.ripe.net/manage-ips-and-asns/legacy-resources/ripe-ncc-services-to-legacy-internet-resource-holders>

ARIN

<https://www.arin.net/resources/guide/legacy/>  
<https://www.arin.net/resources/guide/legacy/services/>

The support of the community is a prerequisite for successful implementation of initiatives aimed towards the improvement of the quality of AFRINIC's registry.

# 11 Definitions

1. AFRINIC community - The AFRINIC community refers collectively to any individual or organisation, whether members of AFRINIC or not, that has an interest in the way the Internet is managed, structured or governed.
2. AFRINIC Helpdesk - This is the first line of assistance available to the AFRINIC community and provides support and information related to AFRINIC registry and related services.
3. AFRINIC member - An AFRINIC member may be any person or legal entity geographically based within, and providing services in the African region, and who is engaged in the use of, or business of providing, open system protocol network.
4. AFRINIC WHOIS Database or the WHOIS - This is a publicly accessible database containing information about allocations and assignments of IP address space, reverse DNS delegation, Internet routing policies, and related objects in the AFRINIC region.
5. AS - Autonomous System (AS) is a group of IP networks run by one or more network operators with a single, clearly defined external routing policy.
6. AS Number or ASN - Autonomous System Number (ASN) is a globally unique identifier that defines an autonomous system (AS). The ASN allows the autonomous systems to exchange routing information with other autonomous systems. ASNs are available in two formats; 2-byte or 16-bit numbers and 4-byte or 32-bit numbers.
7. Holdership/Custodianship - the legitimate holder of the said resource.
8. Hostmaster - These are the IP Number Resource Analysts at AFRINIC who handles and evaluates the IP address requests in accordance with the active policies.
9. Internet Routing Registry - is a globally distributed routing information database.
10. IP - Stands for Internet Protocol, the principal communications protocol in the Internet protocol suite for relaying datagrams across network boundaries. Its routing function enables internetworking and essentially establishes the Internet.
11. IP address - This is a numerical label assigned to each device connected to a computer network that uses the Internet Protocol for communication.
12. IP Prefix - Same as IP address.
13. IPv4 - Stands for Internet Protocol version 4 (IPv4) defines an IP address as a 32-bit number consisting of four octets. Each octet is a number between 0 and 255 and separated by dots.
14. Legacy - is the status that is given to IPv4 address space and Autonomous System Numbers that were attributed before the Regional Internet Registry (RIR) system existed.
15. Maintainer - Is an object in the AFRINIC WHOIS Database. Every object in the AFRINIC WHOIS Database is protected by a maintainer. Those who have access to the maintainer can make changes to these objects in the WHOIS Database.
16. Person object - Is an object in the AFRINIC WHOIS Database. It holds contact information of a person.
17. Reclaim - deregistration(delete) of IPv4 address space from the AFRINIC WHOIS Database.
18. Route object -Route object is an object created in the Internet Routing Registry to specify the Autonomous System Number "ASN" that will propagate this exact IP prefix to the Internet. It can also be used to give information about the organisation that advertises this prefix.

# 12 Appendix

## 12.1 Appendix A1

### IPv4 POOL RECEIVED 2005 - 2020

Date	Administration of 196/8 handed over	IANA	IANA - NRO RSCG ML (holes redistribution)	Grand Total
2004	14552064			14552064
Apr-05		16777216		16777216
Oct-08		16777216		16777216
Nov-10		16777216	25624576	42401792
Feb-11		16777216		16777216
May-14		2097152		2097152
Sep-14		1048576		1048576
Mar-15		524288		524288
Sep-15		262144		262144
Mar-16		131072		131072
Sep-16		16384		16384
Mar-17		8192		8192
Sep-17		4096		4096
Mar-18		2048		2048
Sep-18		1024		1024
Mar-19		512		512
Grand Total	14552064	71204352	25624576	111380992

### IPv6 POOL RECEIVED 2005-2020

Source	Date Received	IPv6 range
IANA	Jun-04	2001:4200::/23
IANA	Oct-06	2c00:000::/12

### ASN POOL RECEIVED 2005-2020

Source	Date Received	ASNs(block)
IANA	Apr-05	36864–37887
IANA	Nov-06	327680–328703
IANA	Mar-20	328704-329727

## 12.2 Appendix A2 - Changes in IPv4 resources in 192/8 holding legacy status 2005-2020

192.96.0.0/16 lost legacy status and was deleted from the WHOIS Database

The administration and delegation of the IPv4 address in the 196.4.0.0/16 block of IPv4 addresses is as follows:

*afrinic|ZA|ipv4|192.96.1.0|256|19930322|assigned|F363E23B|e-stats*

*afrinic|ZA|ipv4|192.96.2.0|256|19920311|assigned|F3647D0A|e-stats*

*afrinic|ZA|ipv4|192.96.3.0|256|19920617|assigned|F36DA9E3|e-stats*

*afrinic|ZA|ipv4|192.96.4.0|256|19920617|assigned|F36E297D|e-stats*

*afrinic|ZA|ipv4|192.96.5.0|256|19920311|assigned|F365185C|e-stats*

*afrinic|ZA|ipv4|192.96.6.0|256|19920617|assigned|F364B381|e-stats*

*afrinic|ZA|ipv4|192.96.7.0|256|19920311|assigned|F36656E0|e-stats*

*afrinic|ZA|ipv4|192.96.8.0|256|19920311|assigned|F36656E0|e-stats*

*afrinic|ZA|ipv4|192.96.9.0|256|19920617|assigned|F3649EE7|e-stats*

*afrinic|ZA|ipv4|192.96.10.0|256|19920617|assigned|F3649EE7|e-stats*

*afrinic|ZA|ipv4|192.96.11.0|256|19920311|assigned|F36C7C6A|e-stats*

*afrinic|ZA|ipv4|192.96.12.0|256|19920311|assigned|F36C7C6A|e-stats*

*afrinic|ZA|ipv4|192.96.13.0|256|19920617|assigned|F3676C40|e-stats*

*afrinic|ZA|ipv4|192.96.14.0|256|19920617|assigned|F3676C40|e-stats*

*afrinic|ZA|ipv4|192.96.15.0|256|19920311|assigned|F36656E0|e-stats*

*afrinic|ZA|ipv4|192.96.16.0|256|19920618|assigned|F369961E|e-stats*

*arin|US|ipv4|192.96.17.0|256|20150211|assigned|afc9f9341313a9718b70eb2582604875|e-stats*

*arin|US|ipv4|192.96.18.0|256|20150212|assigned|30bba0a34e27073370f58b9f44590d05|e-stats*

*afrinic|ZA|ipv4|192.96.19.0|256|19920618|assigned|F3657D90|e-stats*

*afrinic|ZA|ipv4|192.96.20.0|256|19920311|assigned|F366709F|e-stats*

*afrinic|ZA|ipv4|192.96.21.0|256|19920618|assigned|F36103D6|e-stats*

*afrinic|ZA|ipv4|192.96.22.0|256|19920101|assigned|F3636EF7|e-stats*

*arin|US|ipv4|192.96.23.0|256|20150212|assigned|8d5c7d42be6889eaba08c12f718fa635|e-stats*

*afrinic|ZA|ipv4|192.96.24.0|256|19920615|assigned|F36F62C3|e-stats*

*afrinic|ZA|ipv4|192.96.25.0|256|19920615|assigned|F36F62C3|e-stats*

*afrinic|ZA|ipv4|192.96.26.0|256|19920615|assigned|F36F62C3|e-stats*

*afrinic|ZA|ipv4|192.96.27.0|256|19920615|assigned|F36F62C3|e-stats*

*afrinic|ZA|ipv4|192.96.28.0|256|19920615|assigned|F36F62C3|e-stats*

*afrinic|ZA|ipv4|192.96.29.0|256|19920615|assigned|F36F62C3|e-stats*

*afrinic|ZA|ipv4|192.96.30.0|256|19920615|assigned|F36F62C3|e-stats*

*afrinic|ZA|ipv4|192.96.31.0|256|19920615|assigned|F36F62C3|e-stats*

*afrinic|ZA|ipv4|192.96.32.0|256|19920615|assigned|F36878A3|e-stats*

*afrinic|ZA|ipv4|192.96.33.0|256|19920615|assigned|F363A824|e-stats*

*afrinic|ZA|ipv4|192.96.34.0|256|19920615|assigned|F362F006|e-stats*

*afrinic|ZA|ipv4|192.96.35.0|256|19920615|assigned|F36357FE|e-stats*

*arin|US|ipv4|192.96.36.0|256|20150217|assigned|0d39e65d3ac20985fac68d94fd2b7fd2|e-stats*

*afrinic|ZA|ipv4|192.96.37.0|256|20151126|assigned|F36C55B7|e-stats*

*afrinic|ZA|ipv4|192.96.38.0|256|19920615|assigned|F36442A5|e-stats*

*afrinic|ZA|ipv4|192.96.39.0|256|19920615|assigned|F36AA713|e-stats*

*afrinic|ZA|ipv4|192.96.40.0|256|19920615|assigned|F36B003F|e-stats*

*arin|US|ipv4|192.96.41.0|256|20150217|assigned|d5117386609f0ede95c3f11e8405cb37|e-stats*

*arin|US|ipv4|192.96.42.0|256|20150213|assigned|6e94d2cdebb3c87d928baff781bc23da|e-stats*

*afrinic|ZA|ipv4|192.96.43.0|256|19930329|assigned|F3647363|e-stats*

*arin|US|ipv4|192.96.44.0|256|20150213|assigned|dc453267fa13f4e58da0332c5cf4dd00|e-stats*

*afrinic|ZA|ipv4|192.96.45.0|256|19930329|assigned|F3636AE6|e-stats*

*afrinic|ZA|ipv4|192.96.46.0|256|19930329|assigned|F3636AE6|e-stats*

*afrinic|ZA|ipv4|192.96.47.0|256|19930329|assigned|F3636AE6|e-stats*

*afrinic|ZA|ipv4|192.96.48.0|256|19930329|assigned|F3636AE6|e-stats*

afrinic|ZA|ipv4|192.96.49.0|256|19930329|assigned|F3636AE6|e-stats  
afrinic|ZA|ipv4|192.96.50.0|256|19930329|assigned|F3636AE6|e-stats  
afrinic|ZA|ipv4|192.96.51.0|256|19930329|assigned|F368E108|e-stats  
afrinic|ZA|ipv4|192.96.52.0|256|19930329|assigned|F368536C|e-stats  
afrinic|ZA|ipv4|192.96.53.0|256|19930329|assigned|F368536C|e-stats  
afrinic|ZA|ipv4|192.96.54.0|256|19930329|assigned|F368536C|e-stats  
afrinic|ZA|ipv4|192.96.55.0|256|19930329|assigned|F36F955B|e-stats  
afrinic|ZA|ipv4|192.96.56.0|256|19930329|assigned|F367DD20|e-stats  
afrinic|ZA|ipv4|192.96.57.0|256|19930329|assigned|F3668744|e-stats  
afrinic|ZA|ipv4|192.96.58.0|256|20030317|assigned|F3650D09|e-stats  
arin|US|ipv4|192.96.59.0|256|20150218|assigned|840eb4b83cce7caed5a08de371c9be3f|e-stats  
afrinic|ZA|ipv4|192.96.60.0|256|19920615|assigned|F3610B98|e-stats  
afrinic|ZA|ipv4|192.96.61.0|256|19920615|assigned|F3610B98|e-stats  
arin|US|ipv4|192.96.62.0|512|20150112|assigned|b725a263242e5d37e9c69aeaab43461e|e-stats  
arin|US|ipv4|192.96.64.0|1024|20130110|assigned|c4425f0ba0dc6ad1f23faa571f35e418|e-stats  
afrinic|ZA|ipv4|192.96.68.0|256|19920615|assigned|F36583EB|e-stats  
afrinic|ZA|ipv4|192.96.69.0|256|19920615|assigned|F36583EB|e-stats  
afrinic|ZA|ipv4|192.96.70.0|256|19920615|assigned|F365F611|e-stats  
afrinic|ZA|ipv4|192.96.71.0|256|19920615|assigned|F36E40E9|e-stats  
afrinic|ZA|ipv4|192.96.72.0|256|19920617|assigned|F3677AB6|e-stats  
arin|US|ipv4|192.96.73.0|256|20150219|assigned|b77d2cf371cb93a5a8246c83cd43c5c1|e-stats  
afrinic|ZA|ipv4|192.96.74.0|256|19920617|assigned|F36B6F7F|e-stats  
afrinic|ZA|ipv4|192.96.75.0|256|19920617|assigned|F3677AB6|e-stats  
afrinic|ZA|ipv4|192.96.76.0|256|19920617|assigned|F36ACEAD|e-stats  
afrinic|ZA|ipv4|192.96.77.0|256|19930329|assigned|F36FB314|e-stats  
arin|CA|ipv4|192.96.78.0|256|20150218|assigned|4cea6891ed00b82b6a15929339d3f43c|e-stats  
afrinic|ZA|ipv4|192.96.79.0|256|19920723|assigned|F36888CD|e-stats

afrinic|ZA|ipv4|192.96.80.0|256|19920723|assigned|F36DA84F|e-stats  
afrinic|ZA|ipv4|192.96.81.0|256|19920723|assigned|F36E9596|e-stats  
afrinic|ZA|ipv4|192.96.82.0|256|19920723|assigned|F36E9596|e-stats  
afrinic|ZA|ipv4|192.96.83.0|256|19920723|assigned|F36E9596|e-stats  
afrinic|ZA|ipv4|192.96.84.0|256|19920723|assigned|F36E9596|e-stats  
afrinic|ZA|ipv4|192.96.85.0|256|19920723|assigned|F36E9596|e-stats  
afrinic|ZA|ipv4|192.96.86.0|256|19920723|assigned|F36E6BDF|e-stats  
afrinic|ZA|ipv4|192.96.87.0|256|19920812|assigned|F36DD742|e-stats  
afrinic|ZA|ipv4|192.96.88.0|256|19920812|assigned|F36DD742|e-stats  
afrinic|ZA|ipv4|192.96.89.0|256|19920812|assigned|F362ED7A|e-stats  
afrinic|ZA|ipv4|192.96.90.0|256|19920812|assigned|F362ED7A|e-stats  
afrinic|ZA|ipv4|192.96.91.0|256|19920812|assigned|F362ED7A|e-stats  
afrinic|ZA|ipv4|192.96.92.0|256|19920812|assigned|F362ED7A|e-stats  
afrinic|ZA|ipv4|192.96.93.0|256|19930329|assigned|F369EEB5|e-stats  
afrinic|ZA|ipv4|192.96.94.0|256|19930329|assigned|F36B9F4B|e-stats  
afrinic|ZA|ipv4|192.96.95.0|256|19930329|assigned|F36B9F4B|e-stats  
afrinic|ZA|ipv4|192.96.96.0|256|19930329|assigned|F36F3EB0|e-stats  
afrinic|ZA|ipv4|192.96.97.0|256|19930329|assigned|F366C395|e-stats  
afrinic|ZA|ipv4|192.96.98.0|256|19930329|assigned|F366C395|e-stats  
afrinic|ZA|ipv4|192.96.99.0|256|19930329|assigned|F366C395|e-stats  
afrinic|ZA|ipv4|192.96.100.0|256|19930329|assigned|F366C395|e-stats  
afrinic|ZA|ipv4|192.96.101.0|256|19930329|assigned|F366C395|e-stats  
afrinic|ZA|ipv4|192.96.102.0|256|19930329|assigned|F366C395|e-stats  
arin|US|ipv4|192.96.103.0|256|20150220|assigned|3f227ac60187ce72a37b5ae5b0527080|e-stats  
afrinic|ZA|ipv4|192.96.104.0|256|19930329|assigned|F36C2D0A|e-stats  
afrinic|ZA|ipv4|192.96.105.0|256|19930329|assigned|F36D01D1|e-stats  
afrinic|ZA|ipv4|192.96.106.0|256|19930329|assigned|F36D01D1|e-stats

afrinic|ZA|ip4|192.96.107.0|256|19930329|assigned|F36D01D1|e-stats  
afrinic|ZA|ip4|192.96.108.0|256|19930329|assigned|F36D01D1|e-stats  
afrinic|ZA|ip4|192.96.109.0|256|19921209|assigned|F362495A|e-stats  
afrinic|ZA|ip4|192.96.110.0|256|19930329|assigned|F3692450|e-stats  
afrinic|ZA|ip4|192.96.111.0|256|19930329|assigned|F36D855A|e-stats  
afrinic|ZA|ip4|192.96.112.0|256|19930329|assigned|F36FD23A|e-stats  
afrinic|ZA|ip4|192.96.113.0|256|19930329|assigned|F36FD23A|e-stats  
afrinic|ZA|ip4|192.96.114.0|256|19930329|assigned|F36FD23A|e-stats  
afrinic|ZA|ip4|192.96.115.0|256|19930329|assigned|F36FD23A|e-stats  
afrinic|ZA|ip4|192.96.116.0|256|19930329|assigned|F36FD23A|e-stats  
afrinic|ZA|ip4|192.96.117.0|256|19930329|assigned|F36FD23A|e-stats  
afrinic|ZA|ip4|192.96.118.0|256|19930329|assigned|F36FD23A|e-stats  
afrinic|ZA|ip4|192.96.119.0|256|19930329|assigned|F36FD23A|e-stats  
afrinic|ZA|ip4|192.96.120.0|256|19930329|assigned|F3668744|e-stats  
afrinic|ZA|ip4|192.96.121.0|256|19930330|assigned|F3668744|e-stats  
afrinic|ZA|ip4|192.96.122.0|256|19930330|assigned|F3668744|e-stats  
afrinic|ZA|ip4|192.96.123.0|256|19930330|assigned|F3668744|e-stats  
afrinic|ZA|ip4|192.96.124.0|256|19930330|assigned|F3668744|e-stats  
afrinic|ZA|ip4|192.96.125.0|256|19930330|assigned|F3668744|e-stats  
afrinic|ZA|ip4|192.96.126.0|256|19930330|assigned|F3668744|e-stats  
afrinic|ZA|ip4|192.96.127.0|256|19930330|assigned|F3668744|e-stats  
afrinic|ZA|ip4|192.96.128.0|256|19930330|assigned|F3668744|e-stats  
afrinic|ZA|ip4|192.96.129.0|256|19930330|assigned|F3668744|e-stats  
afrinic|ZA|ip4|192.96.130.0|256|19930330|assigned|F3668744|e-stats  
afrinic|ZA|ip4|192.96.131.0|256|19930330|assigned|F3668744|e-stats  
afrinic|ZA|ip4|192.96.132.0|256|19930330|assigned|F3668744|e-stats  
afrinic|ZA|ip4|192.96.133.0|256|19930330|assigned|F3668744|e-stats

afrinic|ZA|ip4|192.96.134.0|256|19930330|assigned|F36647A2|e-stats  
arin|ZZ|ip4|192.96.135.0|256|20201116|reserved|arin|e-stats  
arin|MF|ip4|192.96.136.0|512|20150113|assigned|6680b111cade5b6287a4a741407a2177|e-stats  
afrinic|ZA|ip4|192.96.138.0|256|19930330|assigned|F368600B|e-stats  
afrinic|ZA|ip4|192.96.139.0|256|19930330|assigned|F3654608|e-stats  
afrinic|ZA|ip4|192.96.140.0|256|20070424|assigned|F36656E0|e-stats  
afrinic|ZA|ip4|192.96.141.0|256|20090827|assigned|F36656E0|e-stats  
afrinic|ZA|ip4|192.96.142.0|256|20010605|assigned|F36656E0|e-stats  
arin|ZZ|ip4|192.96.143.0|256|20201116|reserved|arin|e-stats  
afrinic|ZA|ip4|192.96.144.0|256|19930330|assigned|F3618832|e-stats  
arin|ZZ|ip4|192.96.145.0|256|20201116|reserved|arin|e-stats  
afrinic|ZA|ip4|192.96.146.0|256|19930330|assigned|F36AC63A|e-stats  
afrinic|ZA|ip4|192.96.147.0|256|19930330|assigned|F3618959|e-stats  
afrinic|ZA|ip4|192.96.148.0|256|19930330|assigned|F365C05C|e-stats  
afrinic|ZA|ip4|192.96.149.0|256|19930330|assigned|F368BD7C|e-stats  
afrinic|ZA|ip4|192.96.150.0|256|19930330|assigned|F363D7B7|e-stats  
afrinic|ZA|ip4|192.96.151.0|256|19930330|assigned|F36C5105|e-stats  
afrinic|ZA|ip4|192.96.152.0|256|19930330|assigned|F36C5105|e-stats  
afrinic|ZA|ip4|192.96.153.0|256|19930330|assigned|F36C5105|e-stats  
afrinic|ZA|ip4|192.96.154.0|256|19930330|assigned|F36C5105|e-stats  
afrinic|ZA|ip4|192.96.155.0|256|19930330|assigned|F36C5105|e-stats  
arin|US|ip4|192.96.156.0|512|20150121|assigned|f06ee4583e42b3c973ecbeb53ba78a1a|e-stats  
afrinic|ZA|ip4|192.96.158.0|256|19930121|assigned|F36747E0|e-stats  
arin|US|ip4|192.96.159.0|256|20150218|assigned|2d4e003ebc0f6682e84b8c0c3d2f235d|e-stats  
arin|US|ip4|192.96.160.0|1024|20130111|assigned|18f1af4c0a32ed9b490261add6abea41|e-stats  
afrinic|ZA|ip4|192.96.164.0|256|19930121|assigned|F362B21F|e-stats  
afrinic|ZA|ip4|192.96.165.0|256|19930121|assigned|F362B21F|e-stats

afrinic|ZA|ipv4|192.96.166.0|256|19930121|assigned|F362B21F|e-stats  
afrinic|ZA|ipv4|192.96.167.0|256|19930121|assigned|F362B21F|e-stats  
arin|US|ipv4|192.96.168.0|2048|20130125|assigned|61e71732b2520e97c173e44cd94b4493|e-stats  
arin|US|ipv4|192.96.176.0|256|20150219|assigned|0516ada1cff8e20cb1a8f40fce76f39a|e-stats  
afrinic|ZA|ipv4|192.96.177.0|256|19920615|assigned|F36F62C3|e-stats  
afrinic|ZA|ipv4|192.96.178.0|256|19930121|assigned|F36EFD3F|e-stats  
afrinic|ZA|ipv4|192.96.179.0|256|19930506|assigned|F36702DA|e-stats  
afrinic|ZA|ipv4|192.96.180.0|256|19930506|assigned|F36702DA|e-stats  
afrinic|ZA|ipv4|192.96.181.0|256|19930506|assigned|F36702DA|e-stats  
afrinic|ZA|ipv4|192.96.182.0|256|19930506|assigned|F36702DA|e-stats  
afrinic|ZA|ipv4|192.96.183.0|256|19930506|assigned|F36702DA|e-stats  
afrinic|ZA|ipv4|192.96.184.0|256|19930506|assigned|F36702DA|e-stats  
afrinic|ZA|ipv4|192.96.185.0|256|19930506|assigned|F36702DA|e-stats  
afrinic|ZA|ipv4|192.96.186.0|256|19930506|assigned|F36702DA|e-stats  
afrinic|ZA|ipv4|192.96.187.0|256|19930506|assigned|F36702DA|e-stats  
afrinic|ZA|ipv4|192.96.188.0|256|19930506|assigned|F36702DA|e-stats  
afrinic|ZA|ipv4|192.96.189.0|256|19930506|assigned|F36702DA|e-stats  
afrinic|ZA|ipv4|192.96.190.0|256|19930506|assigned|F36702DA|e-stats  
afrinic|ZA|ipv4|192.96.191.0|256|19930506|assigned|F36702DA|e-stats  
arin|US|ipv4|192.96.192.0|256|20150224|assigned|5ef37074f3e8867f76963219b0efd7d0|e-stats  
afrinic|ZA|ipv4|192.96.193.0|256|20021025|assigned|F36D0AFB|e-stats  
afrinic|ZA|ipv4|192.96.194.0|256|20021024|assigned|F36D0AFB|e-stats  
afrinic|ZA|ipv4|192.96.195.0|256|19930506|assigned|F368787E|e-stats  
afrinic|ZA|ipv4|192.96.196.0|256|19930506|assigned|F3646FD3|e-stats  
afrinic|ZA|ipv4|192.96.197.0|256|19930506|assigned|F3646FD3|e-stats  
afrinic|ZA|ipv4|192.96.198.0|256|19930506|assigned|F3646FD3|e-stats  
afrinic|ZA|ipv4|192.96.199.0|256|19930506|assigned|F3646FD3|e-stats

arin|US|ipv4|192.96.200.0|2048|20130128|assigned|920d0c66f3d2ad926a6d590a5d244bd9|e-stats  
arin|US|ipv4|192.96.208.0|4096|20121107|assigned|cf2032bd7c1bf38fdbc5804bcdf149|e-stats  
afrinic|ZA|ipv4|192.96.224.0|256|19930506|assigned|F3643CE1|e-stats  
afrinic|ZA|ipv4|192.96.225.0|256|19930506|assigned|F3643CE1|e-stats  
afrinic|ZA|ipv4|192.96.226.0|256|19930506|assigned|F3643CE1|e-stats  
afrinic|ZA|ipv4|192.96.227.0|256|19930506|assigned|F3643CE1|e-stats  
afrinic|ZA|ipv4|192.96.228.0|256|19930506|assigned|F3643CE1|e-stats  
afrinic|ZA|ipv4|192.96.229.0|256|19930506|assigned|F3643CE1|e-stats  
afrinic|ZA|ipv4|192.96.230.0|256|19930506|assigned|F3643CE1|e-stats  
afrinic|ZA|ipv4|192.96.231.0|256|19930506|assigned|F3643CE1|e-stats  
afrinic|ZA|ipv4|192.96.232.0|256|19930506|assigned|F3643CE1|e-stats  
arin|US|ipv4|192.96.233.0|256|20150408|assigned|b518614ab2a424c2b71a217863e1f8f0|e-stats  
afrinic|ZA|ipv4|192.96.234.0|256|19930505|assigned|F36A4031|e-stats  
afrinic|ZA|ipv4|192.96.235.0|256|19930505|assigned|F36A4031|e-stats  
afrinic|ZA|ipv4|192.96.236.0|256|19930505|assigned|F36A4031|e-stats  
afrinic|ZA|ipv4|192.96.237.0|256|19930505|assigned|F36A4031|e-stats  
afrinic|ZA|ipv4|192.96.238.0|256|19930505|assigned|F36A4031|e-stats  
afrinic|ZA|ipv4|192.96.239.0|256|19930505|assigned|F36A4031|e-stats  
afrinic|ZA|ipv4|192.96.240.0|256|19930505|assigned|F36A4031|e-stats  
afrinic|ZA|ipv4|192.96.241.0|256|19930505|assigned|F36A4031|e-stats  
afrinic|ZA|ipv4|192.96.242.0|256|19930505|assigned|F36A4031|e-stats  
afrinic|ZA|ipv4|192.96.243.0|256|19930505|assigned|F36A4031|e-stats  
arin|US|ipv4|192.96.244.0|256|20150402|assigned|c1dfadd90ff4b9dfcfa1227318245c68|e-stats  
afrinic|ZA|ipv4|192.96.245.0|256|19930506|assigned|F36A56B1|e-stats  
afrinic|ZA|ipv4|192.96.246.0|256|19930506|assigned|F363E23B|e-stats  
afrinic|ZA|ipv4|192.96.247.0|256|19930324|assigned|F36656E0|e-stats  
afrinic|ZA|ipv4|192.96.248.0|256|19930324|assigned|F36656E0|e-stats



*afrinic|ZA|ipv4|192.96.249.0|256|19930324|assigned|F36656E0|e-stats*

*afrinic|ZA|ipv4|192.96.250.0|256|20070424|assigned|F36656E0|e-stats*

*afrinic|ZA|ipv4|192.96.251.0|256|19930506|assigned|F368D8C2|e-stats*

*afrinic|ZA|ipv4|192.96.252.0|256|19930505|assigned|F3624C4F|e-stats*

*afrinic|ZA|ipv4|192.96.253.0|256|19930506|assigned|F36A8C43|e-stats*

*afrinic|ZA|ipv4|192.96.254.0|256|20021028|assigned|F36B7B00|e-stats*

*arin|US|ipv4|192.96.255.0|256|20150223|assigned|0b443e7efd3b9fda9116b05d8cf6eab1|e-stats*

## 12.3 Appendix A3 - Changes in IPv4 resources in 193/8 2005-2020

Migrations happened as

2005	Origin RIR	2009	Origin RIR	Record
193.194.64.0/19	RIPE NCC	193.188.7.0/24	RIPE NCC	Available
193.194.160.0/19	RIPE NCC	193.189.0.0/18	RIPE NCC	Available
		193.189.128.0/24	RIPE NCC	Available
		193.194.3.0/24	RIPE NCC	Available
		193.221.218.0/24	RIPE NCC	Available
		193.227.128.0/24	RIPE NCC	Available

## 12.4 Appendix A4 - Changes in IPv4 resources in 196/8 holding legacy status 2005-2020

	Reason	Record
Resources that lost legacy status		
196.1.101.0/24	transfer	Available
196.1.102.0/24	transfer	Available
196.1.130.0/22	Was delegated to ORG-BTC2-AFRINIC/ORG-BTC1-AFRINIC. Now delegated to ORG-RIS1-AFRINIC	
196.2.16.0/20	Transfer ORG-MA20-AFRINIC to ORG-DDLD1-AFRINIC	Available
196.2.32.0/19		
196.2.64.0/20		
196.4.162.0/24		
196.4.250.0/23	ORG-IHL1-AFRINIC	Available
196.6.0.0/16	Deleted from whois db	Available
196.9.0.0/16	Transfer from ORG-AL1-AFRINIC to ORG-IPL2-AFRINIC	Available
196.10.0.0/16	Deleted from whois db	Available
196.11.0.0/16	Deleted from whois db	Available
196.13.0.0/16	Deleted from whois db	Available
196.15.64.0/18	afrinicZAIipv4 196.15.64.0 16384 20070919 assigned F365C05C	Available
196.22.0.0/22	Transfer from ORG-BA5-AFRINIC	Available
	To ORG-MHCL1-AFRINIC	
196.28.8.0/24	Transfer ORG-MA20-AFRINIC to ORG-DDLD1-AFRINIC	Available
196.28.16.0/19	Transfer ORG-MA20-AFRINIC to ORG-DDLD1-AFRINIC	Available
196.28.64.0/18		Available
196.28.128.0(/18 +/-/19)		Available
196.29.128.0/19		Available
196.29.128.0/19	ORG-IHL1-AFRINIC	Available

The administration and delegation of the IPv4 address in the 196.4.0.0/16 block of IPv4 addresses is as follows:

*afrinic|ZA|ipv4|196.4.0.0|4096|19930831|assigned|F3651CDB|e-stats*

*afrinic|ZA|ipv4|196.4.16.0|1024|19930831|assigned|F3651CDB|e-stats*

*afrinic|ZA|ipv4|196.4.20.0|2560|19930831|assigned|F369838C|e-stats*

*afrinic|ZA|ipv4|196.4.30.0|1536|19940128|assigned|F3672D28|e-stats*

*afrinic|ZA|ipv4|196.4.36.0|1024|19940128|assigned|F36EFF78|e-stats*

*afrinic|ZA|ipv4|196.4.40.0|1024|19940128|assigned|F36EFF78|e-stats*

*afrinic|ZA|ipv4|196.4.44.0|512|19940128|assigned|F36EFF78|e-stats*

*arin|US|ipv4|196.4.46.0|512|19940128|assigned|f717d3821a704554d56c9e0408a58bb5|e-stats*

*arin|US|ipv4|196.4.48.0|4096|19940128|assigned|f717d3821a704554d56c9e0408a58bb5|e-stats*

*arin|US|ipv4|196.4.64.0|1024|19940128|assigned|f717d3821a704554d56c9e0408a58bb5|e-stats*

*arin|US|ipv4|196.4.68.0|512|19940128|assigned|f717d3821a704554d56c9e0408a58bb5|e-stats*

*arin|US|ipv4|196.4.70.0|256|19940128|assigned|f717d3821a704554d56c9e0408a58bb5|e-stats*

*afrinic|ZA|ipv4|196.4.71.0|1280|19940202|assigned|F36D2537|e-stats*

*afrinic|ZA|ipv4|196.4.76.0|256|19940104|assigned|F3684AA6|e-stats*

*afrinic|ZA|ipv4|196.4.77.0|256|19940217|assigned|F3688766|e-stats*

*afrinic|ZA|ipv4|196.4.78.0|256|19940217|assigned|F366D660|e-stats*

*afrinic|ZA|ipv4|196.4.79.0|256|19940217|assigned|F36ED442|e-stats*

*afrinic|ZW|ipv4|196.4.80.0|256|19940324|assigned|F36CDBC1|e-stats*

*afrinic|ZA|ipv4|196.4.81.0|256|19940324|assigned|F36103D6|e-stats*

*afrinic|ZA|ipv4|196.4.82.0|256|19940324|assigned|F36911A4|e-stats*

*afrinic|ZA|ipv4|196.4.83.0|256|19940324|assigned|F36E86B9|e-stats*

*afrinic|ZA|ipv4|196.4.84.0|256|19940324|assigned|F36D0AFB|e-stats*

*afrinic|ZA|ipv4|196.4.85.0|256|19940324|assigned|F36C7065|e-stats*

*afrinic|ZA|ipv4|196.4.86.0|256|19940324|assigned|F36EEC2E|e-stats*

*afrinic|ZA|ipv4|196.4.87.0|256|19940202|assigned|F367678F|e-stats*

*afrinic|ZA|ipv4|196.4.88.0|1024|19940202|assigned|F367678F|e-stats*

*afrinic|ZA|ipv4|196.4.92.0|512|19940202|assigned|F367678F|e-stats*

*afrinic|ZA|ipv4|196.4.94.0|256|19940211|assigned|F36E8343|e-stats*

*afrinic|ZA|ipv4|196.4.95.0|256|19940128|assigned|F3638CA0|e-stats*

*afrinic|ZA|ipv4|196.4.96.0|256|19921210|assigned|F366C5BF|e-stats*

*afrinic|ZA|ipv4|196.4.97.0|256|19940128|assigned|F36D67D8|e-stats*

*afrinic|ZA|ipv4|196.4.98.0|256|19940128|assigned|F36D8163|e-stats*

*afrinic|ZA|ipv4|196.4.99.0|256|19940128|assigned|F3627EC1|e-stats*

*afrinic|ZA|ipv4|196.4.100.0|1024|19940128|assigned|F3699BFF|e-stats*

*afrinic|ZA|ipv4|196.4.104.0|2048|19940128|assigned|F3699BFF|e-stats*

*afrinic|ZA|ipv4|196.4.112.0|4096|19940128|assigned|F3699BFF|e-stats*

*afrinic|ZA|ipv4|196.4.128.0|4096|19940128|assigned|F3699BFF|e-stats*

*afrinic|ZA|ipv4|196.4.144.0|1024|19940128|assigned|F3699BFF|e-stats*

*afrinic|ZA|ipv4|196.4.148.0|512|19940128|assigned|F3699BFF|e-stats*

*afrinic|ZA|ipv4|196.4.150.0|2560|19940128|assigned|F362528C|e-stats*

*afrinic|ZA|ipv4|196.4.160.0|512|19931117|assigned|F362CFE4|e-stats*

*afrinic|ZA|ipv4|196.4.162.0|256|20151126|assigned|F36C55B7|e-stats*

*afrinic|ZA|ipv4|196.4.163.0|768|19940128|assigned|F36B0DC0|e-stats*

*afrinic|ZA|ipv4|196.4.166.0|256|19940202|assigned|F36ADC68|e-stats*

*afrinic|ZA|ipv4|196.4.167.0|256|19940202|assigned|F367F526|e-stats*

*afrinic|ZA|ipv4|196.4.168.0|256|19940202|assigned|F3654040|e-stats*

*afrinic|ZA|ipv4|196.4.169.0|768|19940202|assigned|F364D8FF|e-stats*

*afrinic|ZA|ipv4|196.4.172.0|256|19940202|assigned|F3627EC1|e-stats*

*afrinic|ZA|ipv4|196.4.173.0|4096|19940202|assigned|F365CB75|e-stats*

*afrinic|ZA|ipv4|196.4.189.0|256|19940202|assigned|F3682777|e-stats*

*afrinic|ZA|ipv4|196.4.190.0|2560|19940211|assigned|F36C8DF5|e-stats*

*afrinic|ZA|ipv4|196.4.200.0|3072|19940211|assigned|F3677CA0|e-stats*

*afrinic|ZA|ipv4|196.4.212.0|5120|19940211|assigned|F366AF8E|e-stats*

*afrinic|ZA|ipv4|196.4.232.0|1792|19940211|assigned|F3692450|e-stats*

*afrinic|ZA|ipv4|196.4.239.0|2560|19940211|assigned|F369838C|e-stats*

*afrinic|ZA|ipv4|196.4.249.0|256|19940211|assigned|F369F7BE|e-stats*

*afrinic|ZA|ipv4|196.4.250.0|512|20130207|assigned|F3627BD6|e-stats*

*afrinic|ZA|ipv4|196.4.252.0|768|19940211|assigned|F3616082|e-stats*

*afrinic|LS|ipv4|196.4.255.0|256|20060131|assigned|F3655AEC|e-stats*

The administration and delegation of the IPv4 address in the 196.6.0.0/16 block of IPv4 addresses is as follows:

*afrinic|CI|ipv4|196.6.0.0|256|20200228|assigned|F3619C8C|e-stats*

*afrinic|ZA|ipv4|196.6.1.0|25600|19940125|assigned|F36B82C4|e-stats*

*afrinic|ZA|ipv4|196.6.101.0|256|19931116|assigned|F36CA18A|e-stats*

*afrinic|ZA|ipv4|196.6.102.0|256|19931116|assigned|F3659ABA|e-stats*

*afrinic|NG|ipv4|196.6.103.0|256|20130107|assigned|F36914A7|e-stats*

*afrinic|ZA|ipv4|196.6.104.0|2048|20160302|assigned|F364ED5B|e-stats*

*afrinic|ZA|ipv4|196.6.112.0|2048|20160304|assigned|F366DC11|e-stats*

*afrinic|ZZ|ipv4|196.6.120.0|256|20201116|reserved|afrinic|e-stats*

*afrinic|ZA|ipv4|196.6.121.0|256|20040913|assigned|F36472E5|e-stats*

*afrinic|ZA|ipv4|196.6.122.0|256|20130227|assigned|F36F7374|e-stats*

*afrinic|ZA|ipv4|196.6.123.0|2048|20030416|assigned|F364712F|e-stats*

*afrinic|ZA|ipv4|196.6.131.0|512|19931118|assigned|F36E2D1C|e-stats*

*afrinic|ZA|ipv4|196.6.133.0|256|19930410|assigned|F36FF66E|e-stats*

*afrinic|ZA|ipv4|196.6.134.0|512|19930410|assigned|F36FF66E|e-stats*

*afrinic|ZA|ipv4|196.6.136.0|2048|19930410|assigned|F36FF66E|e-stats*

*afrinic|ZA|ipv4|196.6.144.0|4096|19930410|assigned|F36FF66E|e-stats*

*afrinic|ZA|ipv4|196.6.160.0|2048|19930410|assigned|F36FF66E|e-stats*

*afrinic|ZA|ipv4|196.6.168.0|1024|19930410|assigned|F36FF66E|e-stats*

*afrinic|ZA|ipv4|196.6.172.0|256|19930410|assigned|F36FF66E|e-stats*

*afrinic|ZA|ipv4|196.6.173.0|256|19940122|assigned|F36F2D1A|e-stats*

*afrinic|ZA|ipv4|196.6.174.0|512|20140415|assigned|F36F91FF|e-stats*

*afrinic|ZA|ipv4|196.6.176.0|2048|20160301|assigned|F36B1DE8|e-stats*

*afrinic|ZA|ipv4|196.6.184.0|256|20020125|assigned|F364F510|e-stats*

*afrinic|EG|ipv4|196.6.185.0|256|20130308|assigned|F365509D|e-stats*

*afrinic|NG|ipv4|196.6.186.0|512|20130211|assigned|F362FEE3|e-stats*

*afrinic|NG|ipv4|196.6.188.0|1024|20130409|assigned|F36E9DB4|e-stats*

*afrinic|NG|ipv4|196.6.192.0|1024|20130416|assigned|F361A147|e-stats*

*afrinic|ZZ|ipv4|196.6.196.0|512|20201116|reserved|afrinic|e-stats*

*afrinic|ZA|ipv4|196.6.198.0|256|20010630|assigned|F36806A6|e-stats*

*afrinic|MU|ipv4|196.6.199.0|256|20130314|assigned|F368CAA0|e-stats*

*afrinic|CI|ipv4|196.6.200.0|256|20200228|assigned|F3619C8C|e-stats*

*afrinic|ZA|ipv4|196.6.201.0|256|20010630|assigned|F367B139|e-stats*

*afrinic|KE|ipv4|196.6.202.0|512|20130322|assigned|F36FFC11|e-stats*

*afrinic|NG|ipv4|196.6.204.0|1024|20200128|assigned|F3633423|e-stats*

*afrinic|ZA|ipv4|196.6.208.0|1024|20150529|assigned|F364F510|e-stats*

*afrinic|ZA|ipv4|196.6.212.0|512|20070607|assigned|F3639DD3|e-stats*

*afrinic|ZA|ipv4|196.6.214.0|256|19940324|assigned|F3617C28|e-stats*

*afrinic|KE|ipv4|196.6.215.0|256|20130315|assigned|F3638AA1|e-stats*

*afrinic|NG|ipv4|196.6.216.0|512|20150930|assigned|F36C1C74|e-stats*

*afrinic|CI|ipv4|196.6.218.0|512|20200228|assigned|F3619C8C|e-stats*

*afrinic|KE|ipv4|196.6.220.0|256|20130322|assigned|F36E084C|e-stats*

*afrinic|ZA|ipv4|196.6.221.0|256|20010629|assigned|F36B4505|e-stats*

*afrinic|ZA|ipv4|196.6.222.0|512|20070607|assigned|F36475D7|e-stats*

*afrinic|ZA|ipv4|196.6.224.0|256|20151030|assigned|F36A3D17|e-stats*

*afrinic|ZA|ipv4|196.6.225.0|256|20151125|assigned|F3629FA7|e-stats*

*afrinic|UG|ipv4|196.6.226.0|256|20160128|assigned|F364CDDD|e-stats*

*afrinic|TZ|ipv4|196.6.227.0|256|20160429|assigned|F368E9C8|e-stats*

*afrinic|NG|ipv4|196.6.228.0|256|20160602|assigned|F3632CFE|e-stats*

*afrinic|KE|ipv4|196.6.229.0|256|20170421|assigned|F36D65B9|e-stats*

*afrinic|ZA|ipv4|196.6.230.0|256|20171024|assigned|F36D3FBB|e-stats*

*afrinic|ZA|ipv4|196.6.231.0|256|20170303|assigned|F36FB628|e-stats*

*afrinic|ZA|ipv4|196.6.232.0|1024|20160411|assigned|F36BC5B7|e-stats*

*afrinic|EG|ipv4|196.6.236.0|256|20130329|assigned|F3645D2D|e-stats*  
*afrinic|ZA|ipv4|196.6.237.0|256|20070607|assigned|F36A73B9|e-stats*  
*afrinic|ZA|ipv4|196.6.238.0|512|20130606|assigned|F36C3C50|e-stats*  
*afrinic|ZA|ipv4|196.6.240.0|512|20050523|assigned|F362CFE4|e-stats*  
*afrinic|ZA|ipv4|196.6.242.0|256|20130405|assigned|F3656BE0|e-stats*  
*afrinic|ZA|ipv4|196.6.243.0|1280|19940325|assigned|F363766F|e-stats*  
*afrinic|ZA|ipv4|196.6.248.0|256|19940325|assigned|F36E0C90|e-stats*  
*afrinic|ZA|ipv4|196.6.249.0|512|19940325|assigned|F369688D|e-stats*  
*afrinic|ZA|ipv4|196.6.251.0|256|19940101|assigned|F361D6DD|e-stats*  
*afrinic|ZA|ipv4|196.6.252.0|256|19940325|assigned|F36E86B9|e-stats*  
*afrinic|ZA|ipv4|196.6.253.0|256|19940325|assigned|F3638162|e-stats*  
*afrinic|ZA|ipv4|196.6.254.0|256|19940325|assigned|F364712F|e-stats*  
*afrinic|AO|ipv4|196.6.255.0|256|20130416|assigned|F36B85C7|e-stats*

**The administration and delegation of the IPv4 address in the 196.11.0.0/16 address block is as follows:**

*afrinic|CI|ipv4|196.10.0.0|256|20200228|assigned|F3619C8C|e-stats*

*afrinic|ZA|ipv4|196.10.1.0|256|20130207|assigned|F3627BD6|e-stats*

*afrinic|ZA|ipv4|196.10.2.0|512|20130207|assigned|F3627BD6|e-stats*

*afrinic|ZA|ipv4|196.10.4.0|1024|20130207|assigned|F3627BD6|e-stats*

*afrinic|ZA|ipv4|196.10.8.0|2048|20130207|assigned|F3627BD6|e-stats*

*afrinic|ZA|ipv4|196.10.16.0|4096|20130207|assigned|F3627BD6|e-stats*

*afrinic|ZA|ipv4|196.10.32.0|4096|20130207|assigned|F3627BD6|e-stats*

*afrinic|ZA|ipv4|196.10.48.0|512|20130207|assigned|F3627BD6|e-stats*

*afrinic|ZA|ipv4|196.10.50.0|256|20130207|assigned|F3627BD6|e-stats*

*afrinic|ZZ|ipv4|196.10.51.0|256|20201116|reserved|afrinic|e-stats*

*afrinic|ZA|ipv4|196.10.52.0|1024|20131126|assigned|F36549B1|e-stats*

*afrinic|NG|ipv4|196.10.56.0|1024|20140415|assigned|F365D2FB|e-stats*

*afrinic|ZZ|ipv4|196.10.60.0|256|20201116|reserved|afrinic|e-stats*

*afrinic|ZA|ipv4|196.10.61.0|8960|19940325|assigned|F36ADDE8|e-stats*

*afrinic|ZA|ipv4|196.10.96.0|256|19940325|assigned|F3664DAE|e-stats*

*afrinic|EG|ipv4|196.10.97.0|256|20130520|assigned|F367E9A7|e-stats*

*afrinic|ZA|ipv4|196.10.98.0|512|20130517|assigned|F36D6E6D|e-stats*

*afrinic|ZZ|ipv4|196.10.100.0|256|20201116|reserved|afrinic|e-stats*

*afrinic|ZA|ipv4|196.10.101.0|256|19940325|assigned|F36195C0|e-stats*

*afrinic|ZA|ipv4|196.10.102.0|512|19940325|assigned|F366EADD|e-stats*

*afrinic|ZA|ipv4|196.10.104.0|256|19940325|assigned|F36730C1|e-stats*

*afrinic|ZA|ipv4|196.10.105.0|256|19940325|assigned|F3657B21|e-stats*

*afrinic|ZA|ipv4|196.10.106.0|1536|19940325|assigned|F362F4B9|e-stats*

*afrinic|ZA|ipv4|196.10.112.0|1024|19940325|assigned|F36F854A|e-stats*

*afrinic|ZA|ipv4|196.10.116.0|512|19940325|assigned|F36F854A|e-stats*

*afrinic|ZA|ipv4|196.10.118.0|256|19940321|assigned|F36E1E38|e-stats*

*afrinic|UG|ipv4|196.10.119.0|256|20130606|assigned|F3615BDC|e-stats*

*afrinic|EG|ipv4|196.10.120.0|256|20130703|assigned|F36F2638|e-stats*

*afrinic|ZA|ipv4|196.10.121.0|256|20010723|assigned|F36377D6|e-stats*

*afrinic|CI|ipv4|196.10.122.0|512|20140528|assigned|F36389A7|e-stats*

*afrinic|ZA|ipv4|196.10.124.0|1024|19940325|assigned|F36B673D|e-stats*

*afrinic|ZA|ipv4|196.10.128.0|512|19940325|assigned|F36E2D1C|e-stats*

*afrinic|ZA|ipv4|196.10.130.0|1792|19940325|assigned|F3635201|e-stats*

*afrinic|CI|ipv4|196.10.137.0|256|20200228|assigned|F3619C8C|e-stats*

*afrinic|UG|ipv4|196.10.138.0|512|20130718|assigned|F361029A|e-stats*

*afrinic|ZZ|ipv4|196.10.140.0|256|20201116|reserved|afrinic|e-stats*

*afrinic|ZA|ipv4|196.10.141.0|256|20140716|assigned|F367890A|e-stats*

*afrinic|ZA|ipv4|196.10.142.0|1280|19940325|assigned|F369E5B9|e-stats*

*afrinic|ZZ|ipv4|196.10.147.0|256|20201116|reserved|afrinic|e-stats*

*afrinic|MZ|ipv4|196.10.148.0|256|20140430|assigned|F367EEA2|e-stats*

*afrinic|ZA|ipv4|196.10.149.0|256|19940325|assigned|F36E0682|e-stats*

*afrinic|ZA|ipv4|196.10.150.0|12800|19940325|assigned|F369F217|e-stats*

*afrinic|ZA|ipv4|196.10.200.0|256|19940325|assigned|F36647BF|e-stats*

*afrinic|ZA|ipv4|196.10.201.0|256|19940710|assigned|F3612EB1|e-stats*

*afrinic|ZA|ipv4|196.10.202.0|256|19940325|assigned|F36E6B72|e-stats*

*afrinic|ZA|ipv4|196.10.203.0|256|19940325|assigned|F36656E0|e-stats*

*afrinic|ZA|ipv4|196.10.204.0|2560|19940325|assigned|F36BE5AE|e-stats*

*afrinic|ZA|ipv4|196.10.214.0|256|20140926|assigned|F367DDE6|e-stats*

*afrinic|GH|ipv4|196.10.215.0|256|20141014|assigned|F362F8BB|e-stats*

*afrinic|ML|ipv4|196.10.216.0|2048|20130424|assigned|F362A8C7|e-stats*

*afrinic|ZA|ipv4|196.10.224.0|256|19930325|assigned|F365C9CE|e-stats*

*afrinic|ZA|ipv4|196.10.225.0|256|19940710|assigned|F36F955B|e-stats*



*afrinic|ZA|ipv4|196.10.226.0|256|19940325|assigned|F36E0444|e-stats*  
*afrinic|ZA|ipv4|196.10.227.0|256|19940325|assigned|F3634571|e-stats*  
*afrinic|UG|ipv4|196.10.228.0|256|20130712|assigned|F36544F3|e-stats*  
*afrinic|ZA|ipv4|196.10.229.0|256|19940325|assigned|F368FF40|e-stats*  
*afrinic|ZA|ipv4|196.10.230.0|256|19940710|assigned|F36E0C90|e-stats*  
*afrinic|NG|ipv4|196.10.231.0|256|20130723|assigned|F367FE2B|e-stats*  
*afrinic|ZA|ipv4|196.10.232.0|1024|19940325|assigned|F36B5F70|e-stats*  
*afrinic|ZA|ipv4|196.10.236.0|2560|19940325|assigned|F3661DD9|e-stats*  
*afrinic|ZA|ipv4|196.10.246.0|1280|19940710|assigned|F36E86B9|e-stats*  
*afrinic|CI|ipv4|196.10.251.0|256|20200228|assigned|F3619C8C|e-stats*  
*afrinic|ZZ|ipv4|196.10.252.0|1024|20201116|reserved|afrinic|e-stats*

**The administration and delegation of the IPv4 address in the 196.11.0.0/16 address block is as follows :-**

afrinic|ZA|ipv4|196.11.0.0|7936|19940710|assigned|F3648CAF|e-stats  
afrinic|ZA|ipv4|196.11.31.0|256|20130823|assigned|F368AB0A|e-stats  
afrinic|ZA|ipv4|196.11.32.0|4096|20141104|assigned|F368EFAB|e-stats  
afrinic|ZA|ipv4|196.11.48.0|2048|20131128|assigned|F366BA96|e-stats  
afrinic|ZA|ipv4|196.11.56.0|512|19940710|assigned|F36195C0|e-stats  
afrinic|ZA|ipv4|196.11.58.0|256|19940710|assigned|F364712F|e-stats  
afrinic|ZA|ipv4|196.11.59.0|256|19940710|assigned|F3649840|e-stats  
afrinic|ZA|ipv4|196.11.60.0|256|19940710|assigned|F36B9149|e-stats  
afrinic|ZA|ipv4|196.11.61.0|256|19940710|assigned|F361D481|e-stats  
afrinic|SO|ipv4|196.11.62.0|256|20131025|assigned|F361EE0D|e-stats  
afrinic|ZA|ipv4|196.11.63.0|256|20151021|assigned|F3656BE0|e-stats  
afrinic|ZA|ipv4|196.11.64.0|2816|19940710|assigned|F36647BF|e-stats  
afrinic|DZ|ipv4|196.11.75.0|256|20130930|assigned|F368363E|e-stats  
afrinic|ZA|ipv4|196.11.76.0|1024|20130903|assigned|F3611B19|e-stats  
afrinic|MW|ipv4|196.11.80.0|2048|20151008|assigned|F3639959|e-stats  
afrinic|KE|ipv4|196.11.88.0|512|20131108|assigned|F368155D|e-stats  
afrinic|GH|ipv4|196.11.90.0|256|20131031|assigned|F367B088|e-stats  
afrinic|ZA|ipv4|196.11.91.0|256|19940710|assigned|F36748CD|e-stats  
afrinic|ZA|ipv4|196.11.92.0|1536|19940710|assigned|F363C37F|e-stats  
afrinic|ZA|ipv4|196.11.98.0|256|19940710|assigned|F3636FC6|e-stats  
afrinic|ZA|ipv4|196.11.99.0|768|19940710|assigned|F36F26C7|e-stats  
afrinic|ZA|ipv4|196.11.102.0|256|20131112|assigned|F365CA10|e-stats  
afrinic|MA|ipv4|196.11.103.0|256|20180126|assigned|F36A45F8|e-stats  
afrinic|NG|ipv4|196.11.104.0|256|20131119|assigned|F36762F9|e-stats  
afrinic|ZA|ipv4|196.11.105.0|1024|19940710|assigned|F36FB0F2|e-stats

afrinic|ZA|ipv4|196.11.109.0|1536|19940710|assigned|F363E7F2|e-stats  
afrinic|ZA|ipv4|196.11.115.0|256|19940710|assigned|F3659317|e-stats  
afrinic|ZA|ipv4|196.11.116.0|256|19940710|assigned|F36E83C6|e-stats  
afrinic|ZA|ipv4|196.11.117.0|1280|19940710|assigned|F36CA18A|e-stats  
afrinic|ZA|ipv4|196.11.122.0|256|19941109|assigned|F3623A61|e-stats  
afrinic|ZA|ipv4|196.11.123.0|256|19940710|assigned|F36D98C5|e-stats  
afrinic|SZ|ipv4|196.11.124.0|256|19940524|assigned|F36A7E26|e-stats  
afrinic|ZA|ipv4|196.11.125.0|256|20020521|assigned|F36F854A|e-stats  
afrinic|ZA|ipv4|196.11.126.0|512|20020521|assigned|F36F854A|e-stats  
afrinic|ZA|ipv4|196.11.128.0|1024|20020521|assigned|F36F854A|e-stats  
afrinic|ZA|ipv4|196.11.132.0|512|20020521|assigned|F36F854A|e-stats  
afrinic|ZA|ipv4|196.11.134.0|256|20020521|assigned|F36F854A|e-stats  
afrinic|MZ|ipv4|196.11.135.0|256|20140509|assigned|F364A8AD|e-stats  
afrinic|ZA|ipv4|196.11.136.0|2560|19941109|assigned|F36F7CEB|e-stats  
afrinic|ZA|ipv4|196.11.146.0|1024|19940710|assigned|F364712F|e-stats  
afrinic|ZZ|ipv4|196.11.150.0|512|20201116|reserved|afrinic|e-stats  
afrinic|ZA|ipv4|196.11.152.0|2048|20151203|assigned|F36F76E3|e-stats  
afrinic|ZA|ipv4|196.11.160.0|2560|19940710|assigned|F3634571|e-stats  
afrinic|ZA|ipv4|196.11.170.0|1280|19940524|assigned|F3669426|e-stats  
afrinic|LS|ipv4|196.11.175.0|256|20160817|assigned|F366A786|e-stats  
afrinic|ZA|ipv4|196.11.176.0|2048|20160325|assigned|F36E29ED|e-stats  
afrinic|NG|ipv4|196.11.184.0|1024|20131118|assigned|F361ED8C|e-stats  
afrinic|ZA|ipv4|196.11.188.0|256|20021120|assigned|F36A0643|e-stats  
afrinic|AO|ipv4|196.11.189.0|256|20140521|assigned|F3683950|e-stats  
afrinic|KE|ipv4|196.11.190.0|512|20140212|assigned|F36739A3|e-stats  
afrinic|ZA|ipv4|196.11.192.0|1280|19940524|assigned|F3669426|e-stats  
afrinic|ZA|ipv4|196.11.197.0|256|19940721|assigned|F36B0DC0|e-stats

afrinic|ZA|ipv4|196.11.198.0|256|19940721|assigned|F3660C23|e-stats  
afrinic|ZA|ipv4|196.11.199.0|256|19941109|assigned|F36ACA0E|e-stats  
afrinic|ZA|ipv4|196.11.200.0|256|20010629|assigned|F36AE053|e-stats  
afrinic|ZA|ipv4|196.11.201.0|1024|19940721|assigned|F366709F|e-stats  
afrinic|ZA|ipv4|196.11.205.0|256|19941109|assigned|F36C34C8|e-stats  
afrinic|GH|ipv4|196.11.206.0|512|20150223|assigned|F36B9CA6|e-stats  
afrinic|ZA|ipv4|196.11.208.0|256|19941109|assigned|F36EF091|e-stats  
afrinic|ZA|ipv4|196.11.209.0|1024|19941109|assigned|F369A9D8|e-stats  
afrinic|ZA|ipv4|196.11.213.0|2304|19940721|assigned|F366F03F|e-stats  
afrinic|ZA|ipv4|196.11.222.0|2304|19940721|assigned|F369707E|e-stats  
afrinic|NG|ipv4|196.11.231.0|256|20140217|assigned|F3688B35|e-stats  
afrinic|ZA|ipv4|196.11.232.0|512|20030303|assigned|F3634E70|e-stats  
afrinic|AO|ipv4|196.11.234.0|256|20140901|assigned|F3626C5B|e-stats  
afrinic|ZA|ipv4|196.11.235.0|256|19941109|assigned|F3636FC6|e-stats  
afrinic|ZA|ipv4|196.11.236.0|768|19940721|assigned|F36B003F|e-stats  
afrinic|ZA|ipv4|196.11.239.0|2048|19940721|assigned|F367678F|e-stats  
afrinic|ZA|ipv4|196.11.247.0|256|19940721|assigned|F369901C|e-stats  
afrinic|ZA|ipv4|196.11.248.0|512|19940721|assigned|F3618C1F|e-stats  
afrinic|ZZ|ipv4|196.11.250.0|512|20201116|reserved|afrinic|e-stats  
afrinic|ZA|ipv4|196.11.252.0|768|19941109|assigned|F36C8FAB|e-stats  
afrinic|TZ|ipv4|196.11.255.0|256|20140217|assigned|F363A3AB|e-stats

The administration and delegation of the IPv4 address in the 196.13.0.0/16 address block is as follows:

afrinic|NG|ipv4|196.13.0.0|256|20140922|assigned|F36A339B|e-stats  
afrinic|ZA|ipv4|196.13.1.0|256|19940711|assigned|F3688766|e-stats  
afrinic|ZA|ipv4|196.13.2.0|512|19940711|assigned|F3688766|e-stats  
afrinic|ZA|ipv4|196.13.4.0|1024|19940711|assigned|F3688766|e-stats  
afrinic|ZA|ipv4|196.13.8.0|2048|19940711|assigned|F3688766|e-stats  
afrinic|ZA|ipv4|196.13.16.0|2048|19940711|assigned|F3688766|e-stats  
afrinic|ZA|ipv4|196.13.24.0|1024|19940711|assigned|F3688766|e-stats  
afrinic|ZA|ipv4|196.13.28.0|512|19940711|assigned|F3688766|e-stats  
afrinic|ZA|ipv4|196.13.30.0|256|19940711|assigned|F3688766|e-stats  
afrinic|ZA|ipv4|196.13.31.0|256|20020731|assigned|F3652E81|e-stats  
afrinic|ZA|ipv4|196.13.32.0|8192|20020731|assigned|F3652E81|e-stats  
afrinic|ZA|ipv4|196.13.64.0|4096|20020731|assigned|F3652E81|e-stats  
afrinic|ZA|ipv4|196.13.80.0|256|20020731|assigned|F3652E81|e-stats  
afrinic|ZA|ipv4|196.13.81.0|5120|19940721|assigned|F36AB3D8|e-stats  
afrinic|MZ|ipv4|196.13.101.0|256|20140219|assigned|F3656214|e-stats  
afrinic|ZZ|ipv4|196.13.102.0|256|20201116|reserved|afrinic|e-stats  
afrinic|NG|ipv4|196.13.103.0|256|20141029|assigned|F36307AB|e-stats  
afrinic|ZM|ipv4|196.13.104.0|256|20150626|assigned|F367A972|e-stats  
afrinic|TZ|ipv4|196.13.105.0|256|20150630|assigned|F363B891|e-stats  
afrinic|ZA|ipv4|196.13.106.0|256|20150707|assigned|F3646C24|e-stats  
afrinic|ZA|ipv4|196.13.107.0|256|20150717|assigned|F36C9674|e-stats  
afrinic|MA|ipv4|196.13.108.0|256|20150730|assigned|F3646DCF|e-stats  
afrinic|AO|ipv4|196.13.109.0|256|20150730|assigned|F367FE62|e-stats  
afrinic|CD|ipv4|196.13.110.0|256|20151012|assigned|F3663278|e-stats  
afrinic|NG|ipv4|196.13.111.0|256|20151013|assigned|F363CC54|e-stats

afrinic|NG|ipv4|196.13.112.0|256|20140410|assigned|F36C793B|e-stats  
afrinic|ZA|ipv4|196.13.113.0|256|19941109|assigned|F3676013|e-stats  
afrinic|ZA|ipv4|196.13.114.0|256|19941109|assigned|F36A861F|e-stats  
afrinic|ZA|ipv4|196.13.115.0|256|20030109|assigned|F36656E0|e-stats  
afrinic|ZA|ipv4|196.13.116.0|1024|20070424|assigned|F36656E0|e-stats  
afrinic|ZA|ipv4|196.13.120.0|256|19941109|assigned|F368787E|e-stats  
afrinic|KE|ipv4|196.13.121.0|256|20140605|assigned|F3623EC5|e-stats  
afrinic|UG|ipv4|196.13.122.0|256|20150227|assigned|F36461BD|e-stats  
afrinic|GH|ipv4|196.13.123.0|256|20150303|assigned|F36D433B|e-stats  
afrinic|ZA|ipv4|196.13.124.0|256|20150327|assigned|F3649EC7|e-stats  
afrinic|MU|ipv4|196.13.125.0|256|20150330|assigned|F363F987|e-stats  
afrinic|ZA|ipv4|196.13.126.0|256|20140616|assigned|F363DA41|e-stats  
afrinic|ZA|ipv4|196.13.127.0|256|20070607|assigned|F367E11D|e-stats  
afrinic|ZA|ipv4|196.13.128.0|1024|20070607|assigned|F367E11D|e-stats  
afrinic|ZA|ipv4|196.13.132.0|256|20030109|assigned|F36A8970|e-stats  
afrinic|TZ|ipv4|196.13.133.0|256|20140616|assigned|F36A6BA9|e-stats  
afrinic|ZA|ipv4|196.13.134.0|512|20120430|assigned|F36A339B|e-stats  
afrinic|KE|ipv4|196.13.136.0|512|20140807|assigned|F366D193|e-stats  
afrinic|ZA|ipv4|196.13.138.0|2304|20040826|assigned|F367BC5B|e-stats  
afrinic|ZA|ipv4|196.13.147.0|256|20070713|assigned|F367BC5B|e-stats  
afrinic|ZA|ipv4|196.13.148.0|256|19941109|assigned|F36721BD|e-stats  
afrinic|ZA|ipv4|196.13.149.0|256|19941109|assigned|F369DC2E|e-stats  
afrinic|ZA|ipv4|196.13.150.0|256|19941109|assigned|F366709F|e-stats  
afrinic|ZA|ipv4|196.13.151.0|256|20040830|assigned|F367BC5B|e-stats  
afrinic|ZA|ipv4|196.13.152.0|2048|20070611|assigned|F367BC5B|e-stats  
afrinic|ZA|ipv4|196.13.160.0|256|20070611|assigned|F367BC5B|e-stats  
afrinic|NG|ipv4|196.13.161.0|256|20140820|assigned|F365F66C|e-stats

afrinic|ZA|ipv4|196.13.162.0|256|19941109|assigned|F36C2282|e-stats  
afrinic|ZA|ipv4|196.13.163.0|256|19941109|assigned|F36D808E|e-stats  
afrinic|ZA|ipv4|196.13.164.0|256|19941109|assigned|F36B0673|e-stats  
afrinic|ZA|ipv4|196.13.165.0|256|19941109|assigned|F364132D|e-stats  
afrinic|ZA|ipv4|196.13.166.0|512|19941109|assigned|F36BA278|e-stats  
afrinic|SZ|ipv4|196.13.168.0|256|19941109|assigned|F36D945B|e-stats  
afrinic|ZA|ipv4|196.13.169.0|256|20140829|assigned|F367259E|e-stats  
afrinic|ZA|ipv4|196.13.170.0|768|19941109|assigned|F3660C0D|e-stats  
afrinic|KE|ipv4|196.13.173.0|256|20140919|assigned|F3692CA8|e-stats  
afrinic|GH|ipv4|196.13.174.0|512|20150423|assigned|F3613232|e-stats  
afrinic|ZA|ipv4|196.13.176.0|2048|20150914|assigned|F3624904|e-stats  
afrinic|ZA|ipv4|196.13.184.0|256|20010628|assigned|F36B4505|e-stats  
afrinic|ZA|ipv4|196.13.185.0|256|19941206|assigned|F3684965|e-stats  
afrinic|TZ|ipv4|196.13.186.0|256|20140730|assigned|F36C0F49|e-stats  
afrinic|ZA|ipv4|196.13.187.0|1024|19941206|assigned|F3630D0F|e-stats  
afrinic|CI|ipv4|196.13.191.0|256|20200228|assigned|F3619C8C|e-stats  
afrinic|GH|ipv4|196.13.192.0|2048|20150831|assigned|F366AED1|e-stats  
afrinic|ZA|ipv4|196.13.200.0|256|19960118|assigned|F36B251E|e-stats  
afrinic|ZZ|ipv4|196.13.201.0|256|20201116|reserved|afrinic|e-stats  
afrinic|KE|ipv4|196.13.202.0|256|20160801|assigned|F36EC84F|e-stats  
afrinic|ZZ|ipv4|196.13.203.0|256|20201116|reserved|afrinic|e-stats  
afrinic|AO|ipv4|196.13.204.0|256|20140818|assigned|F36A9D4C|e-stats  
afrinic|ZA|ipv4|196.13.205.0|256|19960118|assigned|F36F367E|e-stats  
afrinic|EG|ipv4|196.13.206.0|256|20150406|assigned|F3681024|e-stats  
afrinic|BF|ipv4|196.13.207.0|256|20150408|assigned|F36847BC|e-stats  
afrinic|SC|ipv4|196.13.208.0|256|20150316|assigned|F36A18AF|e-stats  
afrinic|KE|ipv4|196.13.209.0|256|20150326|assigned|F36B2D16|e-stats

afrinic|ZA|ipv4|196.13.210.0|256|19941206|assigned|F36E4B4F|e-stats  
afrinic|ZA|ipv4|196.13.211.0|512|19941206|assigned|F3654040|e-stats  
afrinic|ZA|ipv4|196.13.213.0|256|19941206|assigned|F36EB8A6|e-stats  
afrinic|ZA|ipv4|196.13.214.0|512|20070607|assigned|F3670A64|e-stats  
afrinic|ZA|ipv4|196.13.216.0|512|20070607|assigned|F36A909F|e-stats  
afrinic|ZA|ipv4|196.13.218.0|512|19941206|assigned|F3654040|e-stats  
afrinic|ZA|ipv4|196.13.220.0|256|19941206|assigned|F367DDE6|e-stats  
afrinic|ZA|ipv4|196.13.221.0|256|19941206|assigned|F36D534F|e-stats  
afrinic|ZA|ipv4|196.13.222.0|256|19941206|assigned|F36CCDC2|e-stats  
afrinic|ZZ|ipv4|196.13.223.0|256|20201116|reserved|afrinic|e-stats  
afrinic|ZA|ipv4|196.13.224.0|256|19941109|assigned|F363E50F|e-stats  
afrinic|ZA|ipv4|196.13.225.0|256|19941109|assigned|F36EBDB8|e-stats  
afrinic|ZA|ipv4|196.13.226.0|256|19941109|assigned|F3618959|e-stats  
afrinic|ZA|ipv4|196.13.227.0|256|19941109|assigned|F3618959|e-stats  
afrinic|ZA|ipv4|196.13.228.0|1024|19941109|assigned|F367678F|e-stats  
afrinic|ZA|ipv4|196.13.232.0|256|19960118|assigned|F36E9EED|e-stats  
afrinic|ZA|ipv4|196.13.233.0|256|19960118|assigned|F36D534F|e-stats  
afrinic|ZA|ipv4|196.13.234.0|1280|19960118|assigned|F3699EFF|e-stats  
afrinic|ZA|ipv4|196.13.239.0|256|19960118|assigned|F36CFC16|e-stats  
afrinic|ZA|ipv4|196.13.240.0|512|19960118|assigned|F363766F|e-stats  
afrinic|NG|ipv4|196.13.242.0|256|20150223|assigned|F368F545|e-stats  
afrinic|AO|ipv4|196.13.243.0|256|20150226|assigned|F368EE51|e-stats  
afrinic|EG|ipv4|196.13.244.0|256|20150430|assigned|F36F33A0|e-stats  
afrinic|NG|ipv4|196.13.245.0|256|20150511|assigned|F36648E8|e-stats  
afrinic|ZA|ipv4|196.13.246.0|256|19960118|assigned|F364B3DE|e-stats  
afrinic|ZA|ipv4|196.13.247.0|512|19960118|assigned|F3638FA9|e-stats  
afrinic|ZA|ipv4|196.13.249.0|256|19960118|assigned|F363B714|e-stats

*afrinic|ZA|ipv4|196.13.250.0|256|19960118|assigned|F36C4E2C|e-stats*

*afrinic|ZA|ipv4|196.13.251.0|256|19960118|assigned|F36D1039|e-stats*

*afrinic|GH|ipv4|196.13.252.0|256|20150806|assigned|F3630C0D|e-stats*

*afrinic|EG|ipv4|196.13.253.0|256|20150526|assigned|F365509D|e-stats*

*afrinic|ZA|ipv4|196.13.254.0|256|20150529|assigned|F363F5B0|e-stats*

*afrinic|KE|ipv4|196.13.255.0|256|20150831|assigned|F36A5B9A|e-stats*

## 12.5 Appendix A5 - 198.54.0.0/16

The administration and delegation of the IPv4 address in the 198.54.0.0/16 address block is as follows:

arin|US|ipv4|198.54.0.0|256|20130924|assigned|7634f8367114dc76c3dc179fd0713ebf|e-stats

afrinic|ZA|ipv4|198.54.1.0|256|19930505|assigned|F36A4031|e-stats

afrinic|ZA|ipv4|198.54.2.0|256|19930505|assigned|F36A4031|e-stats

afrinic|ZA|ipv4|198.54.3.0|256|19930505|assigned|F36A4031|e-stats

afrinic|ZA|ipv4|198.54.4.0|256|19930505|assigned|F36A4031|e-stats

afrinic|ZA|ipv4|198.54.5.0|256|19930505|assigned|F36A4031|e-stats

afrinic|ZA|ipv4|198.54.6.0|256|19930505|assigned|F36A4031|e-stats

afrinic|ZA|ipv4|198.54.7.0|256|19930505|assigned|F36A4031|e-stats

afrinic|ZA|ipv4|198.54.8.0|256|19930505|assigned|F36A4031|e-stats

afrinic|ZA|ipv4|198.54.9.0|256|19930505|assigned|F36A4031|e-stats

afrinic|ZA|ipv4|198.54.10.0|256|19930505|assigned|F36A4031|e-stats

arin|US|ipv4|198.54.11.0|256|20130924|assigned|ebaf74f2286f1d469a76a27e059562ae|e-stats

arin|US|ipv4|198.54.12.0|512|20130819|assigned|b4b3b7a5f30feb368c83d8026cf7ef85|e-stats

arin|US|ipv4|198.54.14.0|256|20130924|assigned|5f908abe2be868ce057c4eaff828393c|e-stats

afrinic|ZA|ipv4|198.54.15.0|256|19930506|assigned|F363C37F|e-stats

afrinic|ZA|ipv4|198.54.16.0|256|19930606|assigned|F36F020B|e-stats

afrinic|ZA|ipv4|198.54.17.0|256|19930506|assigned|F36F020B|e-stats

afrinic|ZA|ipv4|198.54.18.0|256|19930506|assigned|F36F020B|e-stats

afrinic|ZA|ipv4|198.54.19.0|256|19930506|assigned|F36F020B|e-stats

afrinic|ZA|ipv4|198.54.20.0|512|20030902|assigned|F36585BC|e-stats

afrinic|ZA|ipv4|198.54.22.0|4096|20030829|assigned|F36585BC|e-stats

afrinic|ZA|ipv4|198.54.38.0|1536|20030902|assigned|F36585BC|e-stats

afrinic|ZA|ipv4|198.54.44.0|256|20030903|assigned|F36585BC|e-stats

afrinic|ZA|ipv4|198.54.45.0|256|19930506|assigned|F36F020B|e-stats

afrinic|ZA|ipv4|198.54.46.0|256|19930506|assigned|F36F020B|e-stats

afrinic|ZA|ipv4|198.54.47.0|256|19930506|assigned|F36F020B|e-stats

afrinic|ZA|ipv4|198.54.48.0|256|19930506|assigned|F36F020B|e-stats

afrinic|ZA|ipv4|198.54.49.0|256|19930506|assigned|F36D0179|e-stats

afrinic|ZA|ipv4|198.54.50.0|256|19930506|assigned|F36D0179|e-stats

afrinic|ZA|ipv4|198.54.51.0|256|19930506|assigned|F36D0179|e-stats

afrinic|ZA|ipv4|198.54.52.0|256|19930506|assigned|F36D0179|e-stats

afrinic|ZA|ipv4|198.54.53.0|256|19930506|assigned|F36D0179|e-stats

afrinic|ZA|ipv4|198.54.54.0|256|19930506|assigned|F36D0179|e-stats

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