

Abbr	Role	Selected Actor	
R	Registry	PIR/Afilias	
H	Customer	Shinkuro	
A	Current Registrar	Dyn	1040
B	New Registrar	NBC	378
aa	DNS Operator associated with current registrar	Dynect	
bb	DNS Operator associated with new registrar	NBC	
c	current External DNS operator	Shinkuro	
d	new External DNS operator	Sparta	

FQDN dnssecxfr<Regr#>-<testGroup><variant>.org
e.g. dnssecxfr00001-4AcAd.org

Regr# from
<http://www.iana.org/assignments/registrar-ids/>
NamesBeyond 378
DynDNS 1040

"aa" and "bb" are used here and in the headings of each variant to overcome the fact that the VLOOKUP function doesn't distinguish upper and lowercase.

The following tests are performed for each Registrar

Test Group	Test Class	Test	Regrs	Oprs	Ext/Int	Description	Verifn	Variants	# Current Registrar role	# New Registrar Role
1	Basic Op	Signing	1	1	Either	Sign an unsigned zone.	Verify it is signed and validates properly.	Aa,Ac	2	
2	Basic Op	Unsigning	1	1	Either	Unsign a zone	Verify it is unsigned and operational	Aa,Ac	2	
3	Basic Op	Rollover	1	1	Either	Test rollover process wo/ changing Regr or Opr	Show Rollover completes and validation is continuous	Aa,Ac	2	
4	Unsigned Xfr	Unsigned Opr Xfr	1	2	Ext	Regn Xfr, Unisgned Zone	Show all classes of resolvers are able to fetch and validate wo delay, outage or disruption	Ac->Ad	1	
5	Unsigned Xfr	Unsigned Opr & Regn Xfr	2	1	Int	Regr & Opr Xfr, Unsigned Zone	Show all classes of resolvers are able to fetch and validate wo delay, outage or disruption	Aa->Bb	1	1
6	Signed Xfr	Signed Regn Xfr	2	1	Ext	Regr Xfr, Signed Zone - No change of Opr	Show all classes of resolvers are able to fetch and validate wo delay, outage or disruption	Ac->Bc	1	1

variant	1Aa	Sign a zone
Actors		Neither operator is associated with a registrar
R	PIR/Afilias	
H	Shinkuro	
A	Dyn	This variant tests just the transfer of signed DNS service. It is assumed that other services, e.g. mail and web, are provided on separate machines and do not need to be transitioned.
B		
c		
d		
FQDN	dnssecxfr01040-1Aa.org	
NS	a1, a2	Initial State: domain name is registered via A and operating on c1 and c2

Step	Date/Time	Notes	Actor	Actions	Results
1			H	Request a to sign the zone	Positive Ack from a
2			d	Create new ZSKs and KSKs. Add the new KSKs and ZSKs to the zone. Replace all RRSIGs with new signatures. Domain Holder gets DS records and ZSKs from a.	Verify that servers are responding authoritatively with appropriate content
3			H	Tell A to update DS records at parent	
4			A	send EPP command to add new DS records to the parent	

variant	1Aa	Sign a zone
Actors		Neither operator is associated with a registrar
R	PIR/Afilias	<p>This variant tests just the transfer of signed DNS service. It is assumed that other services, e.g. mail and web, are provided on separate machines and do not need to be transitioned.</p> <p>Initial State: domain name is registered via A and operating on c1 and c2</p>
H	Shinkuro	
A	Dyn	
B		
c		
d		
FQDN	dnssecxfr01040-1Aa.org	
NS	a1, a2	

Step	Date/Time	Notes	Actor	Actions	Results
5			R	add the new DS records to the parent	query shows new DS records at the parent

variant	1Ac	Sign a zone
Actors		Neither operator is associated with a registrar
R	PIR/Afilias	
H	Shinkuro	
A	Dyn	This variant tests just the transfer of signed DNS service. It is assumed that other services, e.g. mail and web, are provided on separate machines and do not need to be transitioned.
B		
c	Shinkuro	
d		
FQDN	dnssecxfr01040-1Ac.org	Initial State: domain name is registered via A and operating on c1 and c2
NS	c1, c2	

Step	Date/Time	Notes	Actor	Actions	Results
1			H	Request c to sign the zone	Positive Ack from c
2			d	Create new ZSKs and KSKs. Add the newKSKs and ZSKsto the zone. Replace all RRSIGs with new signatures. Domain Holder gets DS records and ZSKs from c.	Verify that servers are responding authoritatively with appropriate content
3			H	Tell A to update DS records at parent	
4			A	send EPP command to add new DS records to the parent	

5	R	add the new DS records to the parent	query shows new DS records at the parent

variant	2Aa	Unsign a zone
Actors		Neither operator is associated with a registrar
R	PIR/Afilias	This variant tests unsigning the zone operated by the registrar. Initial State: domain name is registered via A and operating on a1 and a2
H	Shinkuro	
A	Dyn	
B		
c		
d		
FQDN	dnssecxfr01040-2Aa.org	
NS	a1, a2	

Step	Date/Time	Notes	Actor	Actions	Results
1			H	Request a to unsign the zone	Positive Ack from a
2			H	Tell A to delete DS records at parent	
3			A	send EPP command to delete new DS records to the parent	
4			R	delete the DS records to the parent	query shows new DS records removed at the parent

5	d Delete ZSKs, KSKs, and RRSIGs from the zone.	Verify that servers are responding authoritatively with appropriate content
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variant	2Ac	Unsign a zone
Actors		Neither operator is associated with a registrar
R	PIR/Afilias	<p>This variant tests unsigning a zone operated by other than the registra</p> <p>Initial State: domain name is registered via A and operating on c1 and c2.</p>
H	Shinkuro	
A	Dyn	
B		
c	Shinkuro	
d		
FQDN	dnssecxfr01040-2Ac.org	
NS	a1, a2	

Step	Date/Time	Notes	Actor	Actions	Results
1			H	Request c to unsign the zone	Positive Ack from c
2			H	Tell A to delete DS records at parent	
3			A	send EPP command to delete new DS records to the parent	
4			R	delete the DS records to the parent	query shows new DS records removed at the parent
5			d	Delete ZSKs, KSKs, and RRSIGs from the zone.	Verify that servers are responding authoritatively with appropriate content

variant	3Aa	Transfer of DNS operation for a signed zone
Actors		Neither operator is associated with a registrar
R	PIR/Afilias	This variant tests rolling the DNSKEYs Initial State: domain name is registered via A, signed and operating on a1 and a2
H	Shinkuro	
A	Dyn	
B		
c		
d		
FQDN	dnssecxfr01040-3Aa.org	
NS	c1, c2	

Step	Date/Time	Notes	Actor	Actions	Results
1			H	Request a to roll the DNSKEYs in the zone	Positive Ack from a.
2			c	Create new ZSKs and KSKs. Add the new KSKs, ZSKs and RRSIGs with previous KSKs, ZSKs and RRSIGs. A creates DS records based on KSKs.	Verify that servers are responding authoritatively with appropriate content
3			A	send EPP command to add new DS records to the parent	query shows new DS records at the parent
4			A	Wait for the maxTTLof ZSKs, and the DS TTL after the DS records appear at the parent.	
5			a	old DNSKEYs are removed from c's zone	query shows records gone
6			A	Send EPP command to remove old (c's) DS records from the parent	query shows DS records gone
7			R	Remove old (c's) DS records from the parent	Parent DNS and Whois both reflect the change

variant	3Ac	Transfer of DNS operation for a signed zone
Actors		Neither operator is associated with a registrar
R	PIR/Afilias	
H	Shinkuro	This variant tests rolling the DNSKEYs Initial State: domain name is registered via A, signed and operating on c1 and c2
A	Dyn	
B		
c	Shinkuro	
d		
FQDN	dnssecxfr01040-3Ac.org	
NS	c1, c2	

Step	Date/Time	Notes	Actor	Actions	Results
1			H	Request c to roll the DNSKEYs in the zone	Positive Ack from c.
2			c	Create new ZSKs and KSKs. Add the new KSKs, ZSKs and RRSIGs with previous KSKs, ZSKs and RRSIGs. Domain Holder gets DS records and ZSKs from c.	Verify that servers are responding authoritatively with appropriate content
3			H	Tell A to update DS records at parent	
4			A	send EPP command to add new DS records to the parent	query shows new DS records at the parent
5			H	Wait for the maxTTLof ZSKs, and the DS TTL after the DS records appear at the parent.	
6			H	Tells c to remove old DNSKEYs and tells A to remove DS records from parent.	

variant	3Ac	Transfer of DNS operation for a signed zone
Actors		Neither operator is associated with a registrar
R	PIR/Afilias	This variant tests rolling the DNSKEYs Initial State: domain name is registered via A, signed and operating on c1 and c2
H	Shinkuro	
A	Dyn	
B		
c	Shinkuro	
d		
FQDN	dnssecxfr01040-3Ac.org	
NS	c1, c2	

Step	Date/Time	Notes	Actor	Actions	Results
7			c	old DNSKEYs are removed from c's zone	query shows records gone
8			A	Send EPP command to remove old (c's) DS records from the parent	query shows DS records gone
9			R	Remove old (c's) DS records from the parent	Parent DNS and Whois both reflect the change

variant	4AcAd	Transfer of DNS operation for an unsigned zone
Actors		Neither operator is associated with a registrar
R	PIR/Afilias	<p>This variant tests just the transfer of DNS service. It is assumed that other services, e.g. mail and web, are provided on separate machines and do not need to be transitioned.</p> <p>Initial State: domain name is registered via A and operating on c1 and c2</p>
H	Shinkuro	
A	Dyn	
B		
c	Shinkuro	
d	Sparta	
FQDN	dnssecxfr01040-4AcAd.org	
NS	c1, c2, d1, d2	

Step	Date/Time	Notes	Actor	Actions	Result
1			H	Request d to operate zone	Positive Ack from d with credentials
2			d	Get copy of zone and instantiate it on d1, d2	Verify that servers are responding authoritatively with appropriate content
3			H	Tell A to replace name servers with d1, d2	Positive Ack from A
4			A	Send EPP command to registry to replace the name servers with d1, d2	
5			R	Replace c1, c2 with d1, d2	Parent DNS and Whois both reflect the change
6		1	H	Tell c to replace name servers with d1, d2	Positive Ack from c
7			c	c updates NS set	Has NS set changed?
8		2	H	Wait for d1, d2 to appear in c and in parent	d1, d2 appear in both c and parent
9			H	Wait max(TTLs on the NS sets)	No visible result. Caches are presumably drained throughout the net

variant	4AcAd	Transfer of DNS operation for an unsigned zone
Actors		Neither operator is associated with a registrar
R	PIR/Afilias	<p>This variant tests just the transfer of DNS service. It is assumed that other services, e.g. mail and web, are provided on separate machines and do not need to be transitioned.</p> <p>Initial State: domain name is registered via A and operating on c1 and c2</p>
H	Shinkuro	
A	Dyn	
B		
c	Shinkuro	
d	Sparta	
FQDN	dnssecxfr01040-4AcAd.org	
NS	c1, c2, d1, d2	

Step	Date/Time	Notes	Actor	Actions	Result
10			H	Tell c to turn off service	c Acks
11			c	c turns off service	c servers responds with "notauth"

variant	5AaBb	Transfer of DNS operation for an unsigned zone
Actors		Each operator is associated with a different registrar
R	PIR/Afilias	<p>This variant tests just the transfer of Registrar and DNS service. It is assumed that other services, e.g. mail and web, are provided on separate machines and do not need to be transitioned.</p> <p>Initial State: domain name is registered via A and operating on a1 and a2</p>
H	Shinkuro	
A	Dyn	
B	NBC	
aa	Dynect	
bb	NBC	
FQDN	dnssecxfr01040-5AaBb.org	
NS	a1, a2, b1, b2	

Step	Date/Time	Notes	Actor	Actions	Results
1		3	H	Request authorization to transfer from A	
2			H	Request Registrar B to transfer Registrar and operate zone	Positive Ack from Reg B
3			B	Send authorization for transfer to R	
4			R	Change Registrar and send notification to both A and B	B authorized to change parent
5			b	Get copy of zone and instantiate it on b1, b2.	Verify that servers are responding authoritatively with appropriate content.
6			H	Tell A to replace name servers with b1, b2 in the child.	Positive Ack from A
7			H	Tell B to replace name servers with b1, b2 in the parent.	Positive Ack from B
8			B	Send EPP command to registry to replace the name servers with b1, b2	

variant	5AaBb	Transfer of DNS operation for an unsigned zone
Actors		Each operator is associated with a different registrar
R	PIR/Afilias	<p>This variant tests just the transfer of Registrar and DNS service. It is assumed that other services, e.g. mail and web, are provided on separate machines and do not need to be transitioned.</p> <p>Initial State: domain name is registered via A and operating on a1 and a2</p>
H	Shinkuro	
A	Dyn	
B	NBC	
aa	Dynect	
bb	NBC	
FQDN	dnssecxfr01040-5AaBb.org	
NS	a1, a2, b1, b2	

Step	Date/Time	Notes	Actor	Actions	Results
9			R	Replace a1, a2 with b1, b2	Parent DNS and Whois both reflect the change

variant	5AaBb	Transfer of DNS operation for an unsigned zone
Actors		Each operator is associated with a different registrar
R	PIR/Afilias	
H	Shinkuro	
A	Dyn	This variant tests just the transfer of Registrar and DNS service. It is assumed that other services, e.g. mail and web, are provided on separate machines and do not need to be transitioned.
B	NBC	
aa	Dynect	
bb	NBC	
FQDN	dnssecxfr01040-5AaBb.org	
NS	a1, a2, b1, b2	Initial State: domain name is registered via A and operating on a1 and a2

Step	Date/Time	Notes	Actor	Actions	Results
10		2	H	Wait for b1, b2 to appear in a and in parent	b1, b2 appear in both a and parent
11			H	Wait max(TTLs on the NS sets)	No visible result. Caches are presumably drained throughout the net
12			H	Tell a to turn off service	a Acks
13			a	a turns off service	a servers respond to queries with "notauth"

variant	5AaBb	Transfer of DNS operation for an unsigned zone
Actors		Each operator is associated with a different registrar
R	PIR/Afilias	<p>This variant tests just the transfer of Registrar and DNS service. It is assumed that other services, e.g. mail and web, are provided on separate machines and do not need to be transitioned.</p> <p>Initial State: domain name is registered via A and operating on a1 and a2</p>
H	Shinkuro	
A	NBC	
B	Dyn	
aa	Dynect	
bb	NBC	
FQDN	dnssecxfr00378-5AaBb.org	
NS	a1, a2, b1, b2	

Step	Date/Time	Notes	Actor	Actions	Results
1		3	H	Request authorization to transfer from A	
2			H	Request Registrar B to transfer Registrar and operate zone	Positive Ack from Reg B
3			B	Send authorization for transfer to R	
4			R	Change Registrar and send notification to both A and B	B authorized to change parent
5			b	Get copy of zone and instantiate it on b1, b2.	Verify that servers are responding authoritatively with appropriate content.
6			H	Tell A to replace name servers with b1, b2 in the child.	Positive Ack from A
7			H	Tell B to replace name servers with b1, b2 in the parent.	Positive Ack from B

variant	5AaBb	Transfer of DNS operation for an unsigned zone
Actors		Each operator is associated with a different registrar
R	PIR/Afilias	<p>This variant tests just the transfer of Registrar and DNS service. It is assumed that other services, e.g. mail and web, are provided on separate machines and do not need to be transitioned.</p> <p>Initial State: domain name is registered via A and operating on a1 and a2</p>
H	Shinkuro	
A	NBC	
B	Dyn	
aa	Dynect	
bb	NBC	
FQDN	dnssecxfr00378-5AaBb.org	
NS	a1, a2, b1, b2	

Step	Date/Time	Notes	Actor	Actions	Results
8			B	Send EPP command to registry to replace the name servers with b1,	
9			R	Replace a1, a2 with b1, b2	Parent DNS and Whois both reflect the change
10		2	H	Wait for b1, b2 to appear in a and in parent	b1, b2 appear in both a and parent
11			H	Wait max(TTLs on the NS sets)	No visible result. Caches are presumably drained throughout the net
12			H	Tell a to turn off service	a Acks
13			a	a turns off service	a servers respond to queries with "notauth"

variant	6AcBc	Transfer of DNS registrar for a signed zone
Actors		DNS operator does not change - is not associated with a registrar
R	PIR/Afilias	<p>This variant tests just the transfer of Registrar. It is assumed that other services, e.g. mail and web, are provided on separate machines and do not need to be transitioned.</p> <p>Initial State: domain name is registered via A and operating on c1 and c2</p>
H	Shinkuro	
A	Dyn	
B	NBC	
c	Shinkuro	
FQDN	dnssecxfr01040-6AcBc.org	
NS	c1, c2	

Step	Date/Time	Notes	Actor	Actions	Results
1		3	H	Request authorization to transfer from A	
2			H	Request Registrar B to transfer Registrar and operate zone	Positive Ack from Reg B
3			B	Send authorization for transfer to R	
4			R	Change Registrar and send notification to both A and B	B authorized to change parent

variant	6AcBc	Transfer of DNS registrar for a signed zone
Actors		DNS operator does not change - is not associated with a registrar
R	PIR/Afilias	<p>This variant tests just the transfer of Registrar. It is assumed that other services, e.g. mail and web, are provided on separate machines and do not need to be transitioned.</p> <p>Initial State: domain name is registered via A and operating on c1 and c2</p>
H	Shinkuro	
A	NBC	
B	Dyn	
c	Shinkuro	
FQDN	dnssecxfr00378-6AcBc.org	
NS	c1, c2	

Step	Date/Time	Notes	Actor	Actions	Results
1		3	H	Request authorization to transfer from A	
2			H	Request Registrar B to transfer Registrar and operate zone	Positive Ack from Reg B
3			B	Send authorization for transfer to R	
4			R	Change Registrar and send notification to both A and B	B authorized to change parent

variant	7AcAd	Transfer of DNS operation for a signed zone
Actors		Neither operator is associated with a registrar
R	PIR/Afilias	
H	Shinkuro	
A	Dyn	This variant tests just the transfer of signed DNS service. It is assumed that other services, e.g. mail and web, are provided on separate machines and do not need to be transitioned. Initial State: domain name is registered via A and operating on c1 and c2
B		
c	Shinkuro	
d	Sparta	
FQDN	dnssecxfr01040-7AcAd.org	
NS	c1, c2, d1, d2	

Step	Date/Time	Notes	Actor	Actions	Results
1			H	Request d to operate zone	Positive Ack from d with credentials
2			d	Get copy of zone and instantiate it on d1, d2. Create new ZSKs and KSKs. Replace KSKs with new KSKs. Add the new ZSKs with old ZSKs. Replace all RRSIGs with new signatures. Domain Holder gets DS records and ZSKs from d.	Verify that servers are responding authoritatively with appropriate content
3			H	Tell c to add new ZSKs to keyset.	Positive Ack from c
4			c	Add ZSKs to the zone's keyset	
5			H	Tell A to update DS records at parent	
6			A	send EPP command to add new DS records to the parent	query shows new DS records at the parent
7			H	Wait for the later of two sequences: ZSK to appear in c, then for the maxTTLof ZSKs, and the DS TTL after the DS records appear at the parent.	
8		1	H	Tell c to replace name servers with d1, d2	Positive Ack from c

variant	7AcAd	Transfer of DNS operation for a signed zone
Actors		Neither operator is associated with a registrar
R	PIR/Afilias	
H	Shinkuro	
A	Dyn	This variant tests just the transfer of signed DNS service. It is assumed that other services, e.g. mail and web, are provided on separate machines and do not need to be transitioned.
B		
c	Shinkuro	
d	Sparta	
FQDN	dnssecxfr01040-7AcAd.org	
NS	c1, c2, d1, d2	Initial State: domain name is registered via A and operating on c1 and c2

Step	Date/Time	Notes	Actor	Actions	Results
9			c	Replace name servers with d1, d2	query shows change at c
10			H	Tell A to replace name servers with d1, d2	Positive Ack from A
11			A	Send EPP command to registry to replace the name servers with d1, d2 at the parent	
12			R	Replace c1, c2 with d1, d2	Parent DNS and Whois both reflect the change
13		2	H	Wait for d1, d2 to appear in c and in parent	d1, d2 appear in both c and parent
14			H	Wait max(TTLs on the NS sets)	No visible result. Caches are presumably drained throughout the net
15			H	Tell c to turn off service	c Acks
16			a	c turns off service	c servers respond to queries with "notauth"
17			H	Tells d to remove old DNSKEYs and tells A to remove DS records from parent.	

variant	7AcAd	Transfer of DNS operation for a signed zone
Actors		Neither operator is associated with a registrar
R	PIR/Afilias	
H	Shinkuro	
A	Dyn	This variant tests just the transfer of signed DNS service. It is assumed that other services, e.g. mail and web, are provided on separate machines and do not need to be transitioned. Initial State: domain name is registered via A and operating on c1 and c2
B		
c	Shinkuro	
d	Sparta	
FQDN	dnssecxfr01040-7AcAd.org	
NS	c1, c2, d1, d2	

Step	Date/Time	Notes	Actor	Actions	Results
18			d	DNSKEYs from c are removed from d's zone	query shows records gone
19			A	Send EPP command to remove old (c's) DS records from the parent	query shows DS records gone
20			R	Remove old (c's) DS records from the parent	Parent DNS and Whois both reflect the change

variant	7AcAa	Transfer of DNS operation for a signed zone
Actors		Only new operator is associated with a registrar
R	PIR/Afilias	
H	Shinkuro	
A	Dyn	This variant tests just the transfer of signed DNS service. It is assumed that other services, e.g. mail and web, are provided on separate machines and do not need to be transitioned.
B		
c	Shinkuro	
d	Sparta	
FQDN	dnssecxfr01040-7AcAa.org	Initial State: domain name is registered via A and operating on c1 and c2.
NS	c1, c2, a1, a2	

Step	Date/Time	Notes	Actor	Actions	Results
1			H	Request a to operate zone	Positive Ack from a with credentials
2			d	Get copy of zone from c and instantiate it on a1, a2. Create new ZSKs and KSKs. Replace KSKs with new KSKs. Add the new ZSKs with old ZSKs. Replace all RRSIGs with new signatures. A gets DS records and ZSKs from a.	Verify that servers are responding authoritatively with appropriate content
3			H	Tell c to add new ZSKs to keyset.	Positive Ack from c
4			c	Add ZSKs to the zone's keyset	
5			A	send EPP command to add new DS records to the parent	query shows new DS records at the parent
6			H	Wait for the later of two sequences: ZSK to appear in c, then for the maxTTLof ZSKs, and the DS TTL after the DS records appear at the parent.	

variant	7AcAa	Transfer of DNS operation for a signed zone
Actors		Only new operator is associated with a registrar
R	PIR/Afilias	<p>This variant tests just the transfer of signed DNS service. It is assumed that other services, e.g. mail and web, are provided on separate machines and do not need to be transitioned.</p> <p>Initial State: domain name is registered via A and operating on c1 and c2.</p>
H	Shinkuro	
A	Dyn	
B		
c	Shinkuro	
d	Sparta	
FQDN	dnssecxfr01040-7AcAa.org	
NS	c1, c2, a1, a2	

Step	Date/Time	Notes	Actor	Actions	Results
7		1	H	Tell c to replace name servers with a1, a2	Positive Ack from c
8			c	Replace name servers with a1, a2	query shows change at c
9			H	Tell A to replace name servers with a1, a2	Positive Ack from A
10			A	Send EPP command to registry to replace the name servers with a1, a2 at the parent	
11			R	Replace c1, c2 with a1, a2	Parent DNS and Whois both reflect the change
12		2	H	Wait for a1, a2 to appear in c and in parent	a1, a2 appear in both c and parent
13			H	Wait max(TTLs on the NS sets)	No visible result. Caches are presumably drained throughout the net

variant	7AcAa	Transfer of DNS operation for a signed zone
Actors		Only new operator is associated with a registrar
R	PIR/Afilias	
H	Shinkuro	
A	Dyn	This variant tests just the transfer of signed DNS service. It is assumed that other services, e.g. mail and web, are provided on separate machines and do not need to be transitioned.
B		
c	Shinkuro	
d	Sparta	
FQDN	dnssecxfr01040-7AcAa.org	Initial State: domain name is registered via A and operating on c1 and c2.
NS	c1, c2, a1, a2	

Step	Date/Time	Notes	Actor	Actions	Results
14			H	Tell c to turn off service	c Acks
15			a	c turns off service	c servers respond to queries with "notauth"
16			H	Tells a to remove old DNSKEYs and tells A to remove DS records from parent.	
17			d	DNSKEYs from c are removed from a's zone	query shows records gone
18			A	Send EPP command to remove old (c's) DS records from the parent	query shows DS records gone
19			R	Remove old (c's) DS records from the parent	Parent DNS and Whois both reflect the change

variant	7AaAc	Transfer of DNS operation for a signed zone
Actors		Only old operator is associated with the registrar
R	PIR/Afilias	This variant tests just the transfer of signed DNS service. It is assumed that other services, e.g. mail and web, are provided on separate machines and do not need to be transitioned. Initial State: domain name is registered via A and operating on a1 and a2
H	Shinkuro	
A	Dyn	
B		
c	Shinkuro	
aa	Dynect	
FQDN	dnssecxfr01040-7AaAc.org	a1 and a2
NS	c1, c2, a1, a2	

Step	Date/Time	Notes	Actor	Actions	Results
1			H	Request c to operate zone	Positive Ack from c with credentials
2			c	Get copy of zone and instantiate it on c1, c2. Create new ZSKs and KSKs. Replace KSKs with new KSKs. Add the new ZSKs with old ZSKs. Replace all RRSIGs with new signatures. Domain Holder gets DS records and ZSKs from c.	Verify that servers are responding authoritatively with appropriate content
3			H	Tell a to add new ZSKs to keyset.	Positive Ack from a.
4			a	Add ZSKs to the zone's keyset	
5			H	Tell A to update DS records at parent	
6			A	send EPP command to add new DS records to the parent	query shows new DS records at the parent

variant	7AaAc	Transfer of DNS operation for a signed zone
Actors		Only old operator is associated with the registrar
R	PIR/Afilias	<p>This variant tests just the transfer of signed DNS service. It is assumed that other services, e.g. mail and web, are provided on separate machines and do not need to be transitioned.</p> <p>Initial State: domain name is registered via A and operating on a1 and a2</p>
H	Shinkuro	
A	Dyn	
B		
c	Shinkuro	
aa	Dynect	
FQDN	dnssecxfr01040-7AaAc.org	
NS	c1, c2, a1, a2	

Step	Date/Time	Notes	Actor	Actions	Results
7			H	Wait for the later of two sequences: ZSK to appear in a, then for the maxTTLof ZSKs, and the DS TTL after the DS records appear at the parent.	
8		1	H	Tell a to replace name servers with c1, c2	Positive Ack from a
9			c	Replace name servers with c1, c2	query shows change at c
10			H	Tell A to replace name servers with c1, c2	Positive Ack from A
11			A	Send EPP command to registry to replace the name servers with c1, c2 at the parent	
12			R	Replace a1, a2 with c1, c2	Parent DNS and Whois both reflect the change
13		2	H	Wait for c1, c2 to appear in a and in parent	c1, c2 appear in both a and parent

variant	7AaAc	Transfer of DNS operation for a signed zone
Actors		Only old operator is associated with the registrar
R	PIR/Afilias	<p>This variant tests just the transfer of signed DNS service. It is assumed that other services, e.g. mail and web, are provided on separate machines and do not need to be transitioned.</p> <p>Initial State: domain name is registered via A and operating on a1 and a2</p>
H	Shinkuro	
A	Dyn	
B		
c	Shinkuro	
aa	Dynect	
FQDN	dnssecxfr01040-7AaAc.org	
NS	c1, c2, a1, a2	

Step	Date/Time	Notes	Actor	Actions	Results
14			H	Wait max(TTLs on the NS sets)	No visible result. Caches are presumably drained throughout the net
15			H	Tell a to turn off service	a Acks
16			a	a turns off service	a servers respond to queries with "notauth"
17			H	Tells c to remove old DNSKEYs and tells A to remove DS records from parent.	
18			c	DNSKEYs from a are removed from c's zone	query shows records gone

variant	7AaAc	Transfer of DNS operation for a signed zone
Actors		Only old operator is associated with the registrar
R	PIR/Afilias	<p>This variant tests just the transfer of signed DNS service. It is assumed that other services, e.g. mail and web, are provided on separate machines and do not need to be transitioned.</p> <p>Initial State: domain name is registered via A and operating on a1 and a2</p>
H	Shinkuro	
A	Dyn	
B		
c	Shinkuro	
aa	Dynect	
FQDN	dnssecxfr01040-7AaAc.org	
NS	c1, c2, a1, a2	

Step	Date/Time	Notes	Actor	Actions	Results
19			A	Send EPP command to remove old (a's) DS records from the parent	query shows DS records gone
20			R	Remove old (a's) DS records from the parent	Parent DNS and Whois both reflect the change

variant	8AaBb	Transfer of DNS operation for a signed zone
Actors		Each operator is associated with a different registrar
R	PIR/Afilias	This variant tests just the transfer of Registrar and DNS service. It is assumed that other services, e.g. mail and web, are provided on separate machines and do not need to be transitioned. Initial State: domain name is registered via A and operating on a1 and a2
H	Shinkuro	
A	Dyn	
B	NBC	
aa	Dynect	
bb	NBC	
FQDN	dnssecxfr01040-8AaBb.org	
NS	a1, a2, b1, b2	

Step	Date/Time	Notes	Actor	Actions	Results
1		3	H	Request authorization to transfer from A	
2			H	Request Registrar B to transfer Registrar and operate zone	Positive Ack from Reg B
3			B	Send authorization for transfer to R	
4			R	Change Registrar and send notification to both A and B	B authorized to change parent
5			b	Get copy of zone and instantiate it on b1, b2. Create new ZSKs and KSKs. Replace KSKs with new KSKs. Add new ZSKs with the old ZSKs. Replace KSKs with new KSKs. Add the new ZSKs with old ZSKs. Replace all RRSIGs with new signatures. Domain Holder gets DS records and ZSKs from b.	Verify that servers are responding authoritatively with appropriate content and signatures validate.
6			H	Tell A to add new ZSKs to keyset.	Positive Ack from A
7			A	Add ZSKs to the zone's keyset	

variant	8AaBb	Transfer of DNS operation for a signed zone
Actors		Each operator is associated with a different registrar
R	PIR/Afilias	<p>This variant tests just the transfer of Registrar and DNS service. It is assumed that other services, e.g. mail and web, are provided on separate machines and do not need to be transitioned.</p> <p>Initial State: domain name is registered via A and operating on a1 and a2</p>
H	Shinkuro	
A	Dyn	
B	NBC	
aa	Dynect	
bb	NBC	
FQDN	dnssecxfr01040-8AaBb.org	
NS	a1, a2, b1, b2	

Step	Date/Time	Notes	Actor	Actions	Results
8			B	send EPP command to add new DS records to the parent	
9			R	add the new DS records to the parent	query shows new DS records at the parent
10			H	Wait for the later of two sequences: ZSK to appear in c, then for the maxTTLof ZSKs, and, after the DS records appear at the parent, wait for the DS TTL.	
11			H	Tell A to replace name servers with b1, b2 in the child.	Positive Ack from A
12			H	Tell B to replace name servers with b1, b2 in the parent.	Positive Ack from B
13			B	Send EPP command to registry to replace the name servers with b1, b2	
14			R	Replace a1, a2 with b1, b2	Parent DNS and Whois both reflect the change
15		2	H	Wait for b1, b2 to appear in a and in parent	b1, b2 appear in both a and parent

variant	8AaBb	Transfer of DNS operation for a signed zone
Actors		Each operator is associated with a different registrar
R	PIR/Afilias	
H	Shinkuro	This variant tests just the transfer of Registrar and DNS service. It is assumed that other services, e.g. mail and web, are provided on separate machines and do not need to be transitioned.
A	Dyn	
B	NBC	
aa	Dynect	
bb	NBC	
FQDN	dnssecxfr01040-8AaBb.org	Initial State: domain name is registered via A and operating on a1 and a2
NS	a1, a2, b1, b2	

Step	Date/Time	Notes	Actor	Actions	Results
16			H	Wait max(TTLs on the NS sets)	No visible result. Caches are presumably drained throughout the net
17			H	Tell a to turn off service	a Acks
18			a	a turns off service	a servers respond to queries with "notauth"
19			H	Tells b to remove old DNSKEYs and tells B to remove old DS records from parent.	
20			b	DNSKEYs from a are removed from b's zone	query shows records gone
21			B	Send EPP command to remove old (a's) DS records from the parent	query shows DS records gone

variant	8AaBb	Transfer of DNS operation for a signed zone
Actors		Each operator is associated with a different registrar
R	PIR/Afilias	<p>This variant tests just the transfer of Registrar and DNS service. It is assumed that other services, e.g. mail and web, are provided on separate machines and do not need to be transitioned.</p> <p>Initial State: domain name is registered via A and operating on a1 and a2</p>
H	Shinkuro	
A	NBC	
B	Dyn	
aa	NBC	
bb	Dynect	
FQDN	dnssecxfr00378-8AaBb.org	
NS	a1, a2, b1, b2	

Step	Date/Time	Notes	Actor	Actions	Results
1		3	H	Request authorization to transfer from A	
2			H	Request Registrar B to transfer Registrar and operate zone	Positive Ack from Reg B
3			B	Send authorization for transfer to R	
4			R	Change Registrar and send notification to both A and B	B authorized to change parent
5			b	Get copy of zone and instantiate it on b1, b2. Create new ZSKs and KSKs. Replace KSKs with new KSKs. Add new ZSKs with the old ZSKs. Replace KSKs with new KSKs. Add the new ZSKs with old ZSKs. Replace all RRSIGs with new signatures. Domain Holder gets DS records and ZSKs from b	Verify that servers are responding authoritatively with appropriate content and signatures validate.
6			H	Tell A to add new ZSKs to keyset.	Positive Ack from A
7			A	Add ZSKs to the zone's keyset	

variant	8AaBb	Transfer of DNS operation for a signed zone
Actors		Each operator is associated with a different registrar
R	PIR/Afilias	
H	Shinkuro	
A	NBC	This variant tests just the transfer of Registrar and DNS service. It is assumed that other services, e.g. mail and web, are provided on separate machines and do not need to be transitioned.
B	Dyn	
aa	NBC	
bb	Dynect	
FQDN	dnssecxfr00378-8AaBb.org	
NS	a1, a2, b1, b2	Initial State: domain name is registered via A and operating on a1 and a2

Step	Date/Time	Notes	Actor	Actions	Results
8			B	send EPP command to add new DS records to the parent	
9			R	add the new DS records to the parent	query shows new DS records at the parent
10			H	Wait for the later of two sequences: ZSK to appear in c, then for the maxTTLof ZSKs, and, after the DS records appear at the parent, wait for the DS TTL.	
11			H	Tell A to replace name servers with b1, b2 in the child.	Positive Ack from A
12			H	Tell B to replace name servers with b1, b2 in the parent.	Positive Ack from B
13			B	Send EPP command to registry to replace the name servers with b1, b2	
14			R	Replace a1, a2 with b1, b2	Parent DNS and Whois both reflect the change
15		2	H	Wait for b1, b2 to appear in a and in parent	b1, b2 appear in both a and parent

variant	8AaBb	Transfer of DNS operation for a signed zone
Actors		Each operator is associated with a different registrar
R	PIR/Afilias	
H	Shinkuro	
A	NBC	This variant tests just the transfer of Registrar and DNS service. It is assumed that other services, e.g. mail and web, are provided on separate machines and do not need to be transitioned.
B	Dyn	
aa	NBC	
bb	Dynect	
FQDN	dnssecxfr00378-8AaBb.org	
NS	a1, a2, b1, b2	Initial State: domain name is registered via A and operating on a1 and a2

Step	Date/Time	Notes	Actor	Actions	Results
16			H	Wait max(TTLs on the NS sets)	No visible result. Caches are presumably drained throughout the net
17			H	Tell a to turn off service	a Acks
18			a	a turns off service	a servers respond to queries with "notauth"
19			H	Tells b to remove old DNSKEYs and tells B to remove old DS records from parent.	
20			b	DNSKEYs from a are removed from b's zone	query shows records gone
21			B	Send EPP command to remove old (a's) DS records from the parent	query shows DS records gone

1 This step is needed to cause child-sticky resolvers to learn the new name servers

2 There should be a maximum time to wait. If the expected data does not appear in the old name servers, proceed anyway. Child-sticky resolvers may suffer a glitch

3 Appears required for .org, but not clear in the ICANN policy:
<http://www.icann.org/en/transfers/policy-en.htm>