Resource Transfer in the Global RPKI

sidr wg / Québec City

2011.07.28

Randy Bush <randy@psg.com>

From - *Resource Transfer in the Global RPKI*

2007.12.08

The Goal

Transfer of actual address space and/or autonomous system number resources between two internet registries (ISPs, RIRs, NIRs, etc.) must be reasonably achievable for most useful operational needs
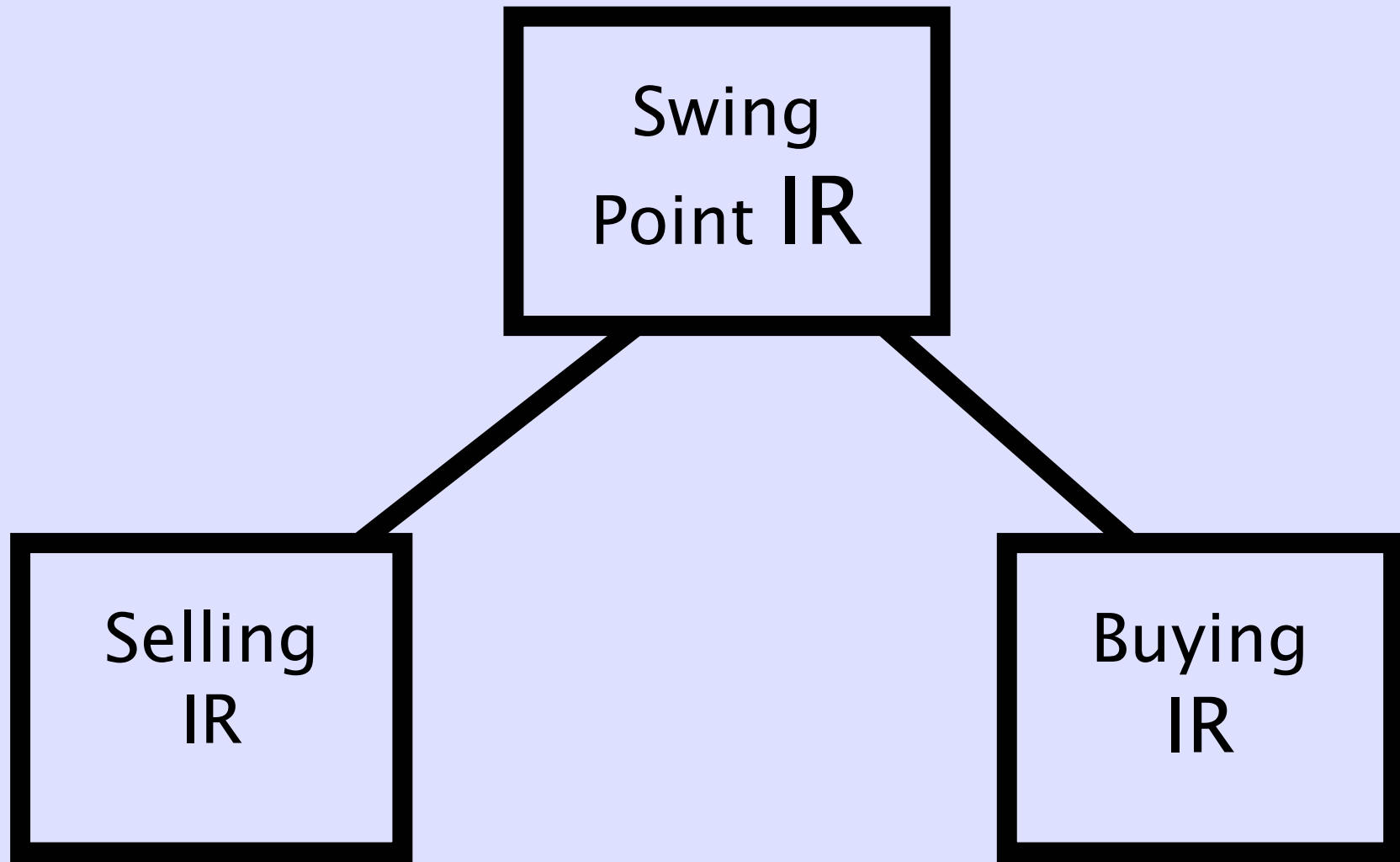
The Players

Seller and *Buyer* are the **end** parties to a transfer, the selling IR transferring the resource to the buying IR
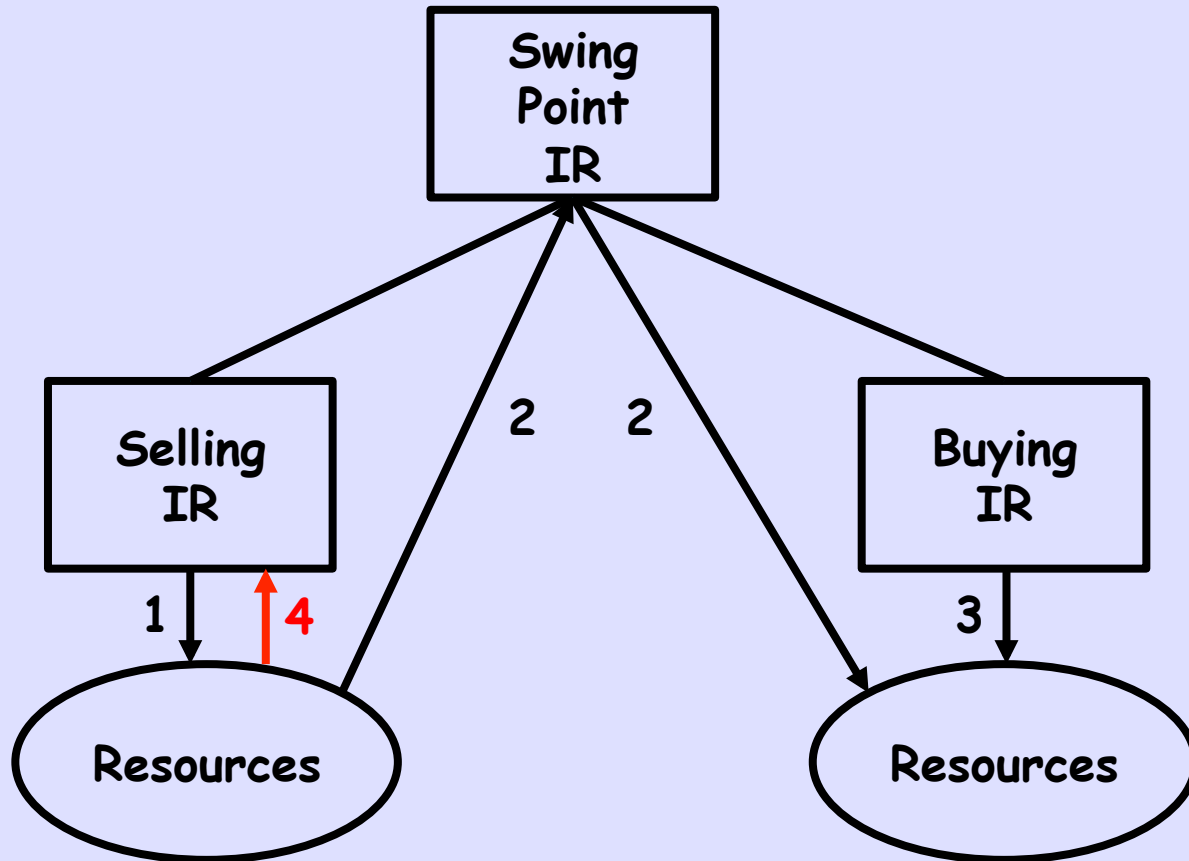
Related Parties

The *Swing Point* is the IR at the lowest point in the RPKI hierarchy which the seller and buyer have as a common parent and which has agreed to be used as the agent of transfer

It Might be Simple☺

```
                    ┌─────────────┐
                    │    Swing    │
                    │  Point IR   │
                    └──────┬──────┘
              ┌────────────┴────────────┐
     ┌────────┴────────┐       ┌────────┴────────┐
     │   Selling IR    │       │    Buying IR    │
     └─────────────────┘       └─────────────────┘
```
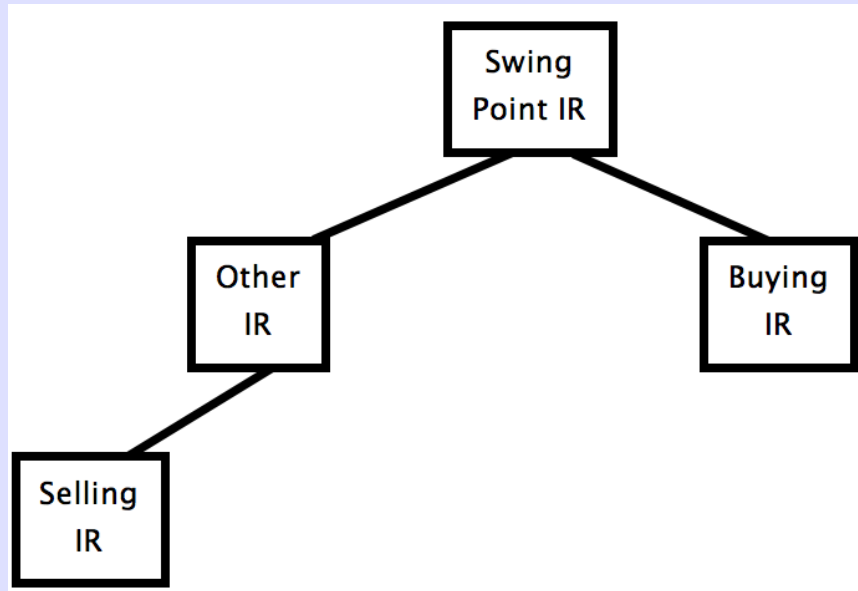
Simple Swing

The Sequence

1. The seller creates a certificate describing the subset of the seller's resources which are to be transferred.

2. The seller tells the swing point that it wishes to transfer the resources described by the certificate to the buyer

3. The swing point issues a new expanded certificate to the buyer describing the buyer's old holdings plus the new resources.

4. When the seller and the buyer are comfortable that the customers swung, routing done, etc., and the business aspects of the transfer have been accomplished, they inform the swing point which then shrinks the seller's resource certificate, removing the transferred resources.

Indirect Seller

Swing point needs to be assured that it is contractually able to move the resource given its relationship to the Other IR

The process is the same as for the simple case, except that, before issuing the expanded certificate to the buyer in step 3, the swing point must assure itself that policy and contractual issues are cleared

Indirect Buyer Harder
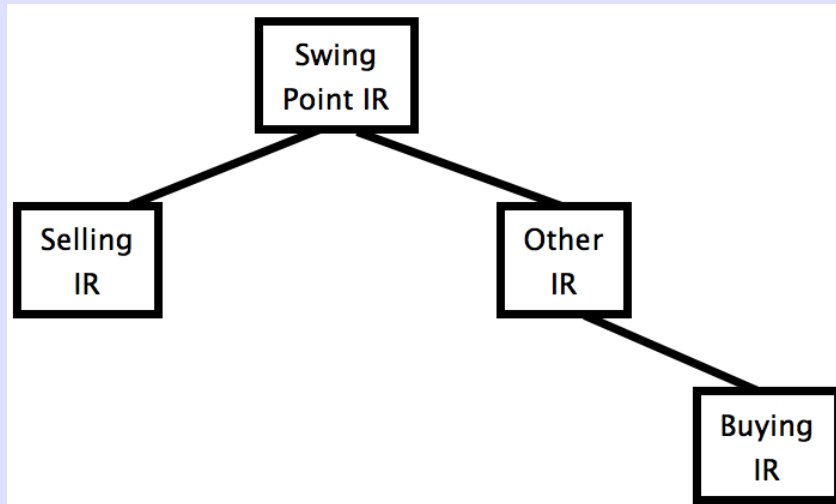
- Buyer may not be an existing resource holder
- Buyer must explore the graph and choose an IR with which to contract a relationship

- Intermediate IRs between swing point and buyer must give business and technical consent
- Swing point can not force its child to issue a resource certificate to the buyer
- Buyer's contract with parent will likely include resource issues.

RIRs Have Problems

- IANA is not active to be the swing point

- Even when it is, how do you move a /16 from APNIC to ARIN given that they currently trade in /8s only?

- Having proxies for each other means it is not really transferred as it is still under the selling RIR's control

RIR Cross Proxy

PKI with (some) Cross Certificates
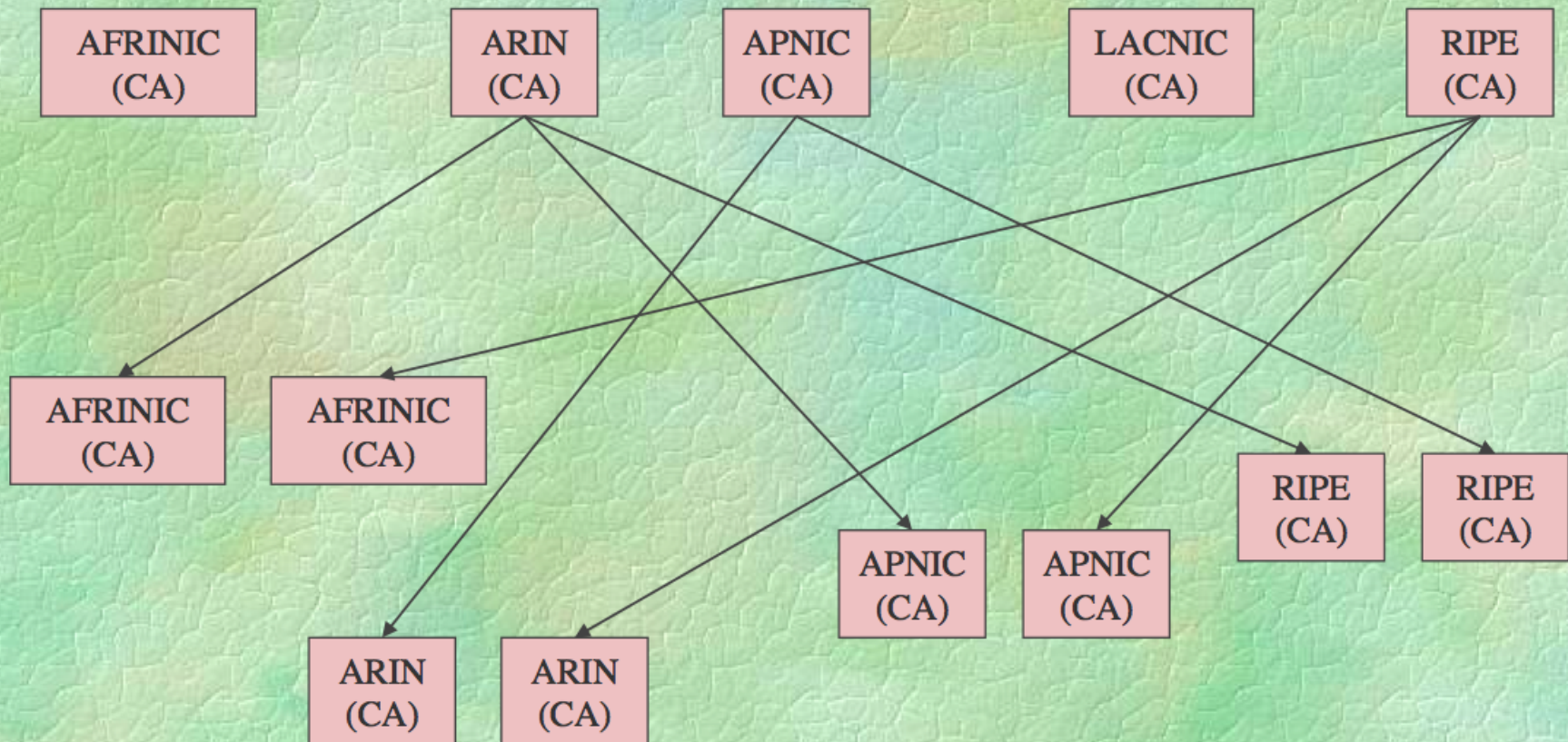
2007 Slide from Steve Kent

Even With Proxy Scheme

- The /8 slice and dice problem still exists

- It exists with the IANA or with RIR cross proxies

- And there is always the problem of guarantying uniqueness

Perhaps the RIRs Would Like to Share their Plan?