Certification More Tangible

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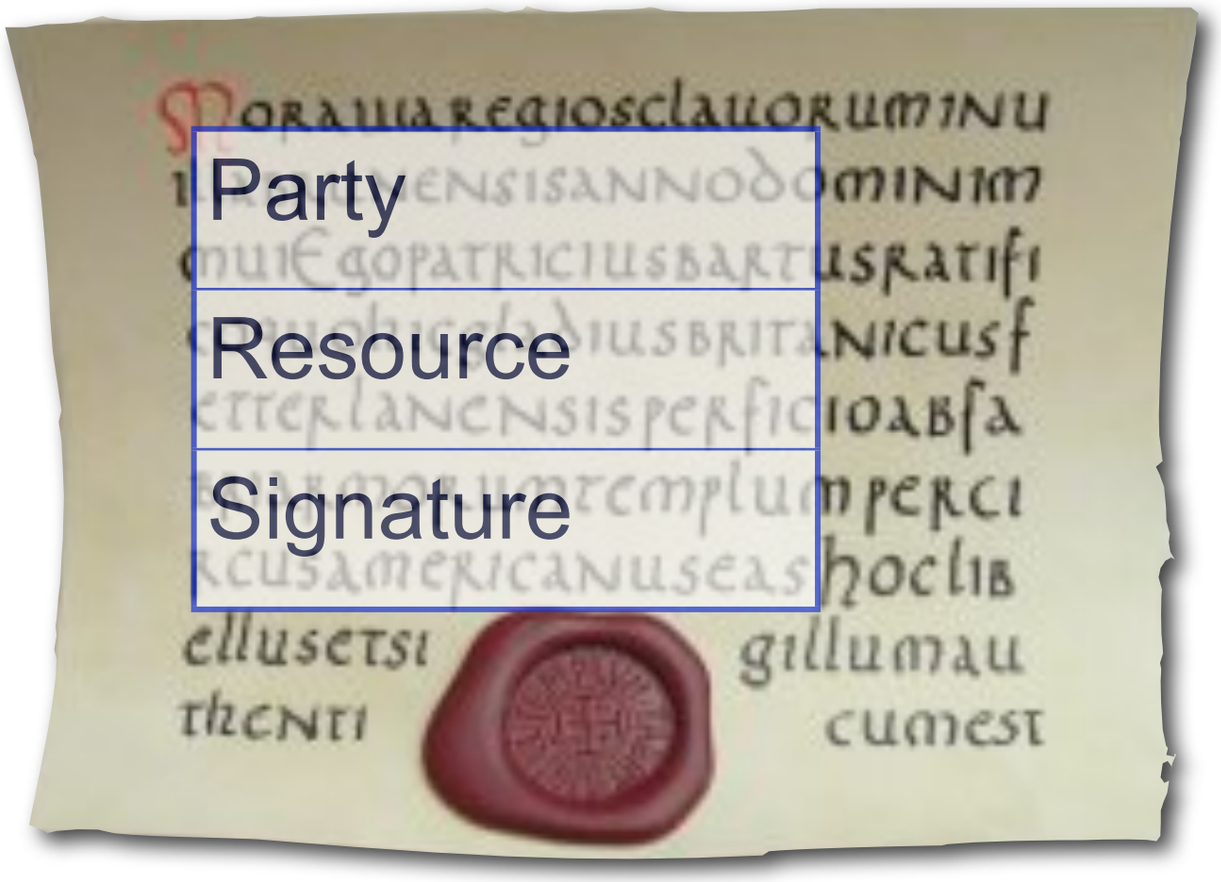
Drivers

- RIR's are implementing a solution to certify resources
  - APNIC and ARIN are implementing an RPKI engine
- Potential IPv4 marketplace: keeping it white
  - Need to be prepared when the stakes go up
  - An IPv4 black market could turn routing into chaos
- RIPE NCC has the task to uphold principles
  - Uniqueness
- Enhanced Registration Services
  - Increasing importance in relation with government, law enforcement...

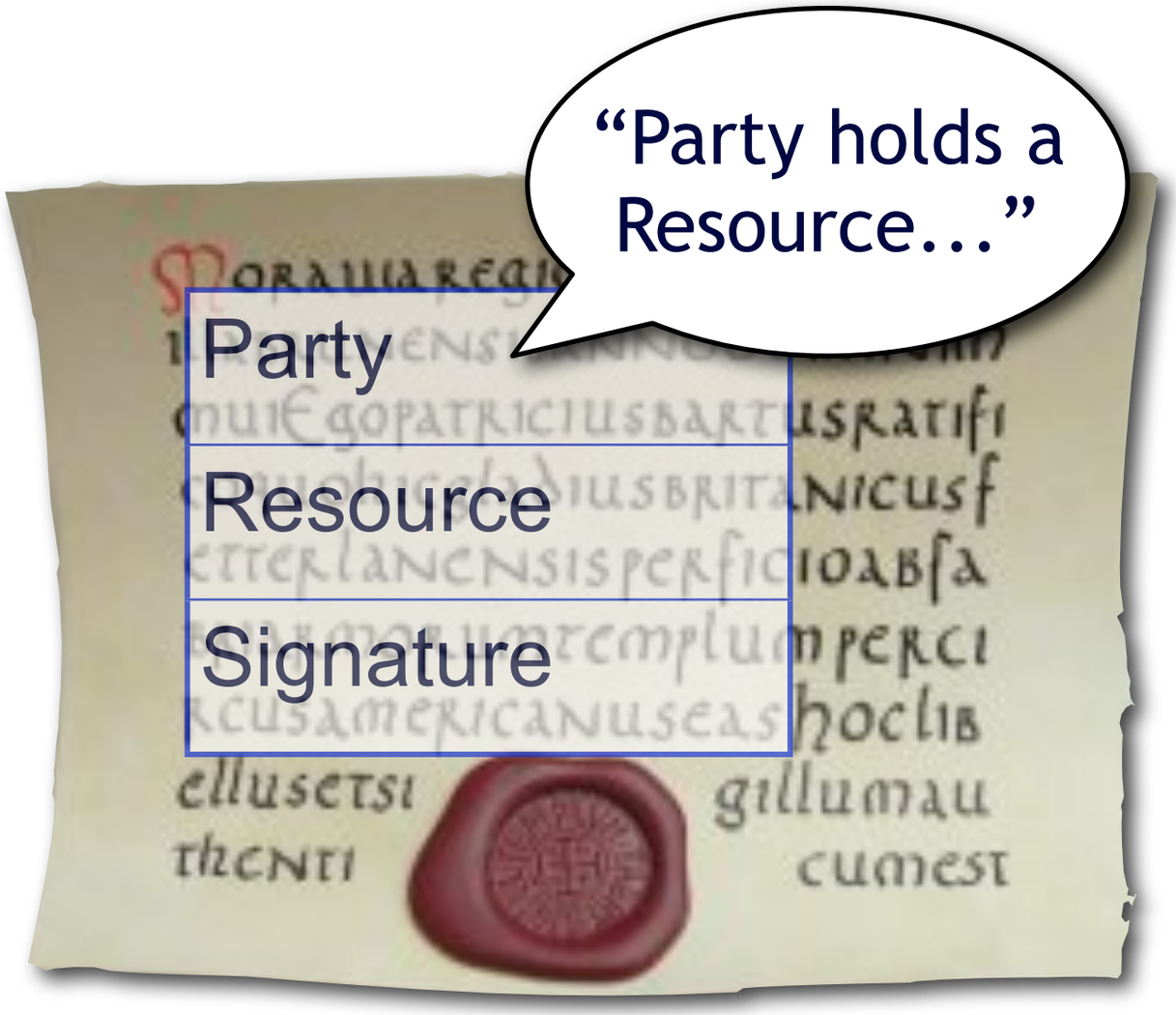
Progress since RIPE 55 Meeting

- Focus on business value for RIPE members
- Insight by starting implementation
- The added value of Certification
- Business cases more tangible
- Develop internal business processes to support Certification
- Closer contact with Task force
- More active involvement in technical discussions

What is the value of a certificate?



What is the value of a certificate?



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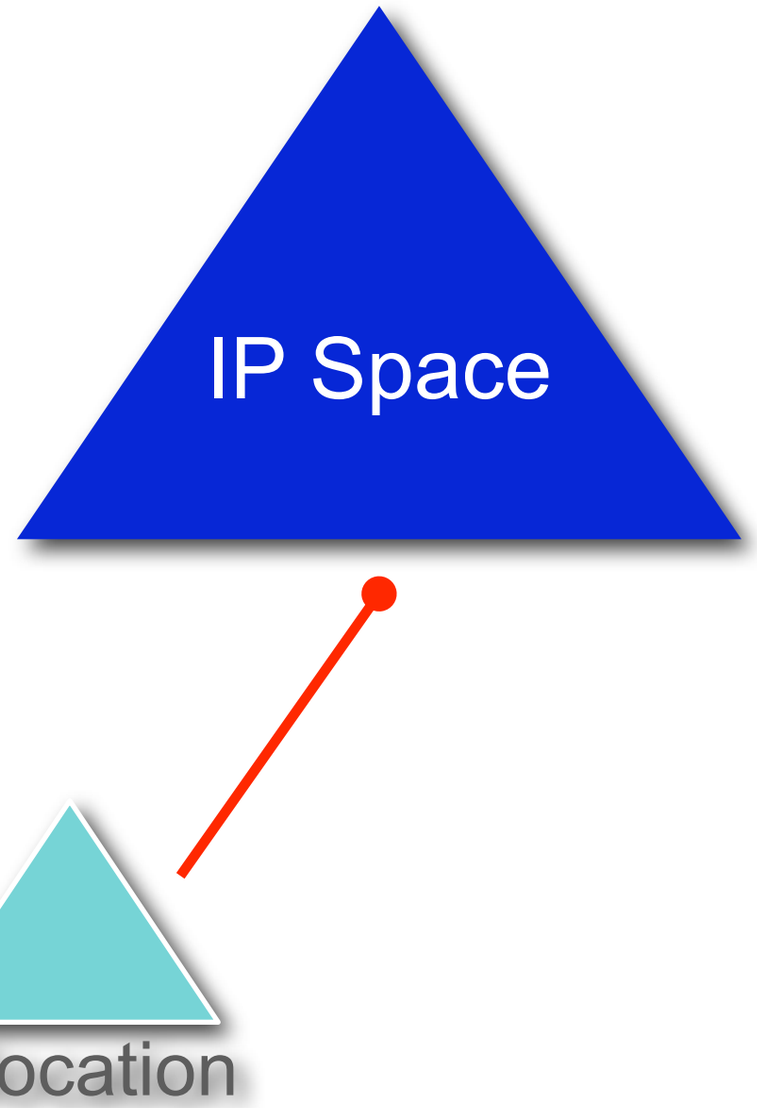
- Certification only answers the first question
- Certificates are not trust anchors, the registry is!

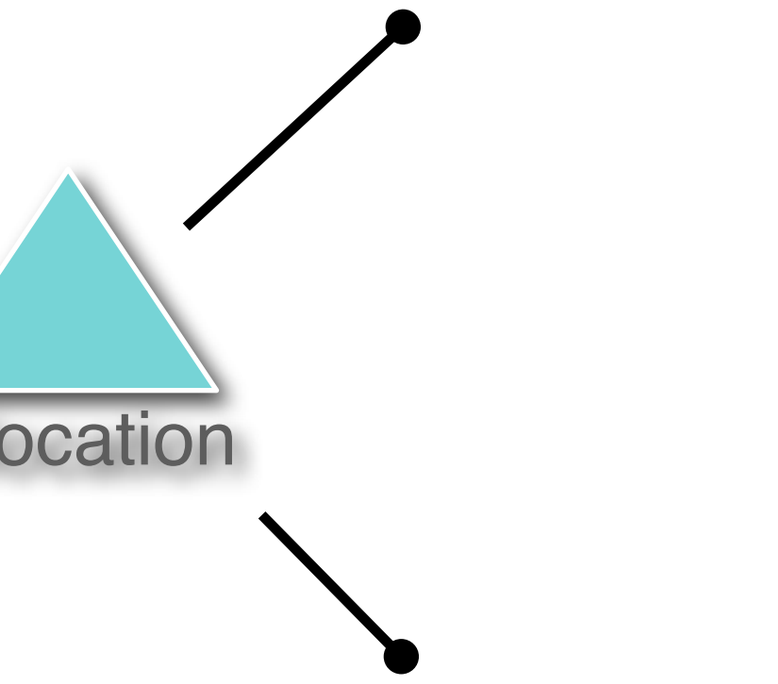
It's all about Allocations

- Allocations are RIPE NCC's core concept
- Connect a party to an IP Resource



Certificates vs. Allocations

- A certificate is **another representation** of an allocation
- Value of certificates is **only the added value** over other representations



cer•tif•i•cate

noun |sərˈtifikit|

an official document att… …n particular

- a document recordi… …arriage, or death.
- a document describ… …on : *certificate of immunization.*
- a document attestir… …ent in a course of study or training : *graduate certificate in information technology.*
- a document attesting ~~ownership~~ holdership of a certain item : *a stock certificate.*

Added value

- Certificates can be the international exchange standard between RIR's
- Could help automated provisioning
  - easier to prove holdership than through "detective work"
  - certified information in parseable format
- Support resource transfers
- (Long term) Could help future secure routing
  - fills need for a PKI infrastructure and trusted third party

Certificates are not a prerequisite for:

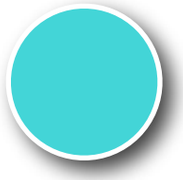
- Transfer of allocations
  - Registry **can** do this without any form of electronic certification
  - Transfers have been done already
- Proof of holdership
  - Certificates are not the truth, they **only attest** the trust as held by the Registry
  - A certificate is only as valuable as the trust in the Registry
  - Holdership could be proven in other (non-electronic) ways

The wider picture

- Our (development team's) primary goal may be getting certification implemented...
- but we can't do this in a vacuum!
  - How does policy affect certification?
  - How does certification affect RIPE NCC's processes?
  - Where does certification fit in the processes?
- There is a **strong interdependence** between technical implementation, processes and policy.

Even more tangible...

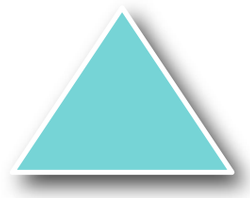
Scenario



AS65000

MegaCorp

MiniCorp



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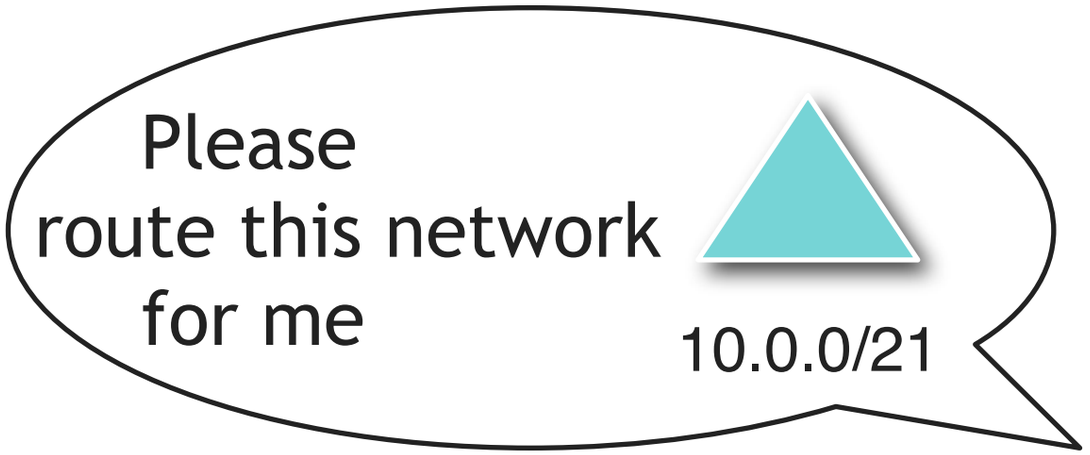
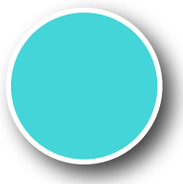
Scenario





AS65000

MiniCorp

MEGACORP

MegaCorp

Scenario

Please route this network for me

10.0.0/21

AS65000

MEGACORP

MegaCorp

Hmm, is MiniCorp really the holder of that resource?

MiniCorp

Automated Provisioning

- Provisioning an IP Resource
  - Does Holder **really** hold the resource?
- Checking takes detective work
  - Takes manpower
  - Needs specific knowledge and skills
- Is there an easy and secure way?
  - Meet the Route Origination Authorization (ROA)

Meet the ROA

- Secure: only true holder can create
- One-sided: states permission of address space holder only
- Multiple ROAs for one prefix allowed

Relation ROA — Resource Certificate

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MiniCorp's
resource certificate

Relation ROA — Resource Certificate

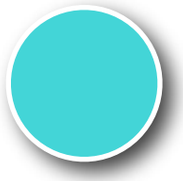
MiniCorp's
resource certificate

One-time certificate
(EE certificate)

Scenario: conversation

Please route this network for me

10.0.0/21



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Scenario: conversation

Please route this network for me

10.0.0/21

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MegaCorp

Okay, please sign a ROA with my ASN

AS65000

Demo Automated Provisioning

Thank you!

- RIPE Certification Task Force
  http://www.ripe.net/ripe/tf/certification/index.html
- APNIC Resource Certification Wiki
  http://mirin.apnic.net/resourcecerts/wiki/index.php
- IETF SIDR Working Group
  http://tools.ietf.org/wg/sidr/