# Information Protection in Content-centric Networks

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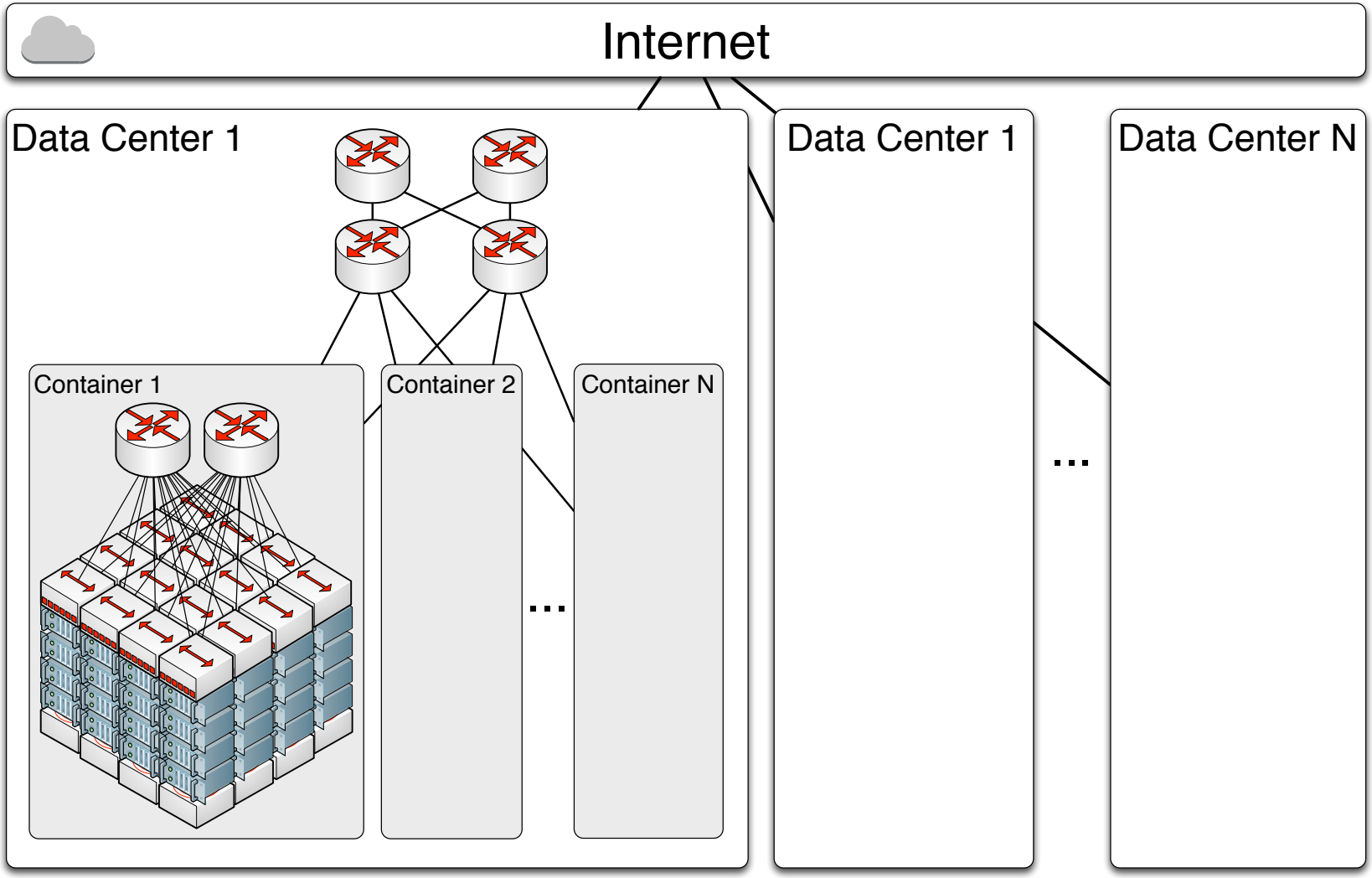
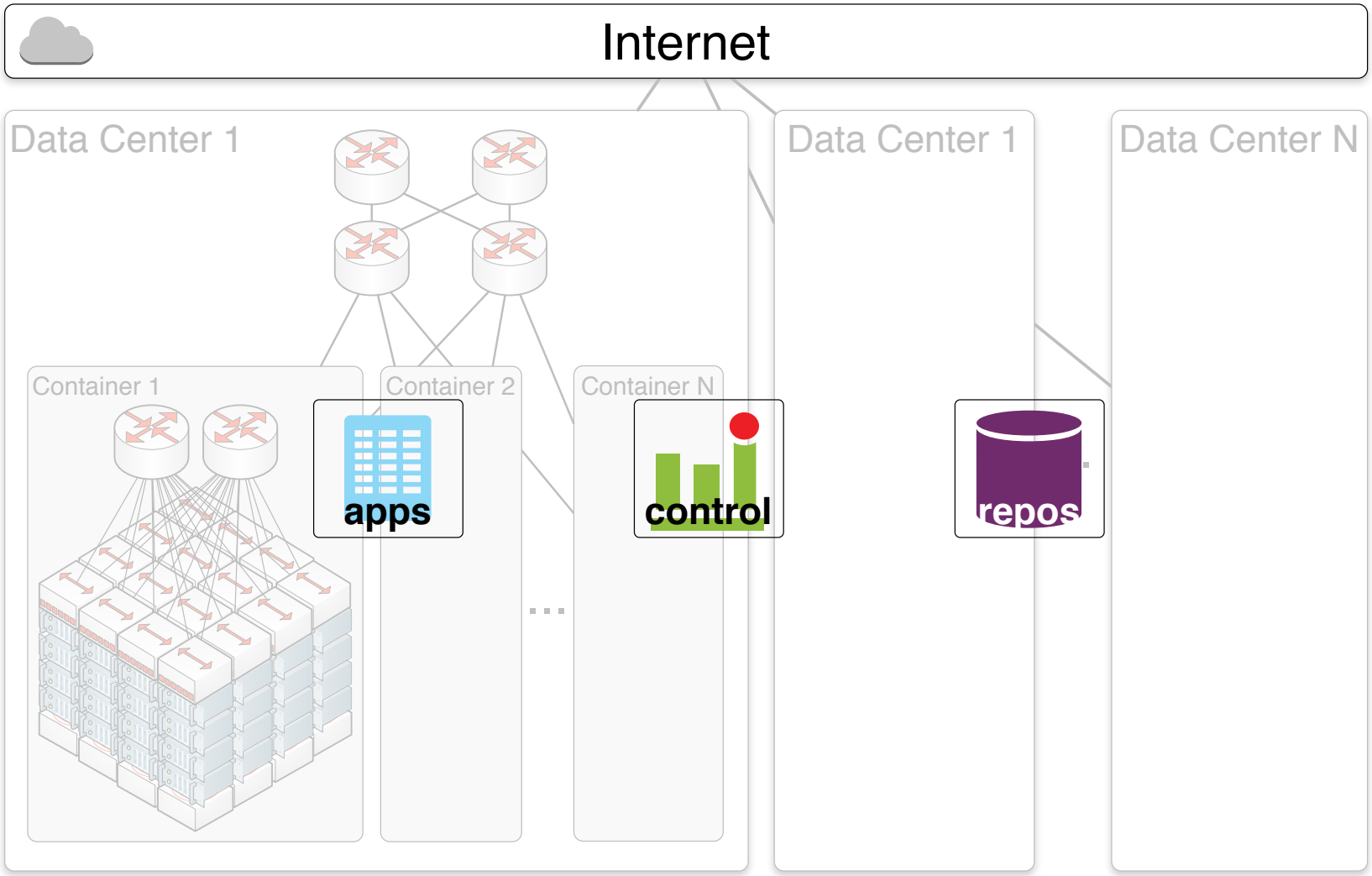
# Networks in the Bad Old Days



# The Brave New World!



# Original Goals

## Contribution of Work

The contribution of this work is a quantitative analysis of policy-centric overlay network options, associated taxonomies of use, and prototypical technology proofs-of-concept.

- *Network Control Options* — This includes various types networks and associated strengths and weaknesses addressing centralized and decentralized models.
- *Taxonomies of Use* — Depending on the specific usage management requirements and context, different overlays have different applicability; this work will provide guidance on suitability; it will eventually lead to how to manage data flow within SDN-capable infrastructure.
- *Prototypical Technologies* — Examples and proofs-of-concept will be required to appropriately analyze various architectural alternatives.

# Meeting the Goals

## Network Control Options

I have developed and analysed multiple types of overlay systems, both centralized (hierarchical) and non-centralized (non-hierarchical), with differing topologies and integrated content-centric control.

## Taxonomies of Use

I have established and verified a taxonomy of usage management and applied that within the network providing mechanisms extendible to SDN use.

## Prototypical Technologies

Prototype information-centric networks are running between the Rackspace and Amazon clouds.

# Impact and Originality

- Information-centric architectures common in future internet designs
- Significant work with respect to name/object binding, overall topologies, approaches
- No significant work yet on exploiting new capabilities in information-centricity for enhanced security
  - Absense of strict layering
  - Lack of packetization preserves contexts
  - Evolution of end-to-end arguments

## Additional Contributions

This work, as well as providing alternatives analysis with respect to security in information-centric architectures and approaches, also demonstrates the first implementation of granular context-sensitive security functionality embedded in an information-centric network.

**Questions? Comments?**