

Towards Robust Trust in Software Defined Networks

Christopher C. Lamb

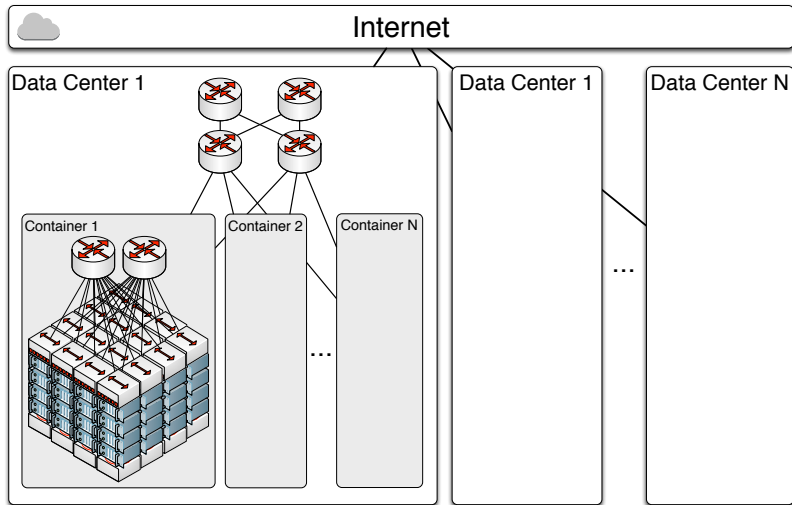
Department of Electrical and Computer Engineering
University of New Mexico

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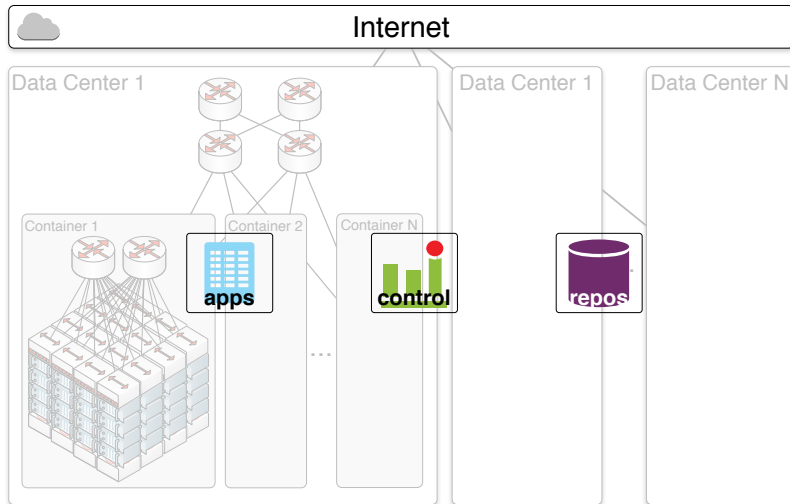


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Networks in the Bad Old Days



The Brave New World!

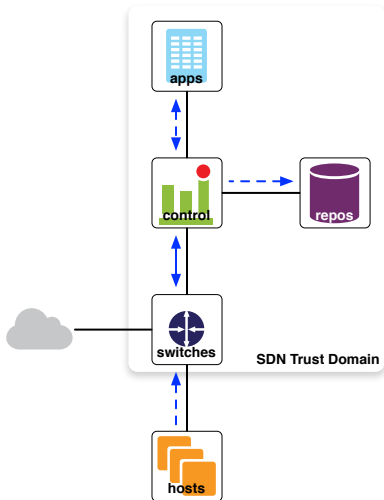


Brave New Implications

Unintended Results of SDN

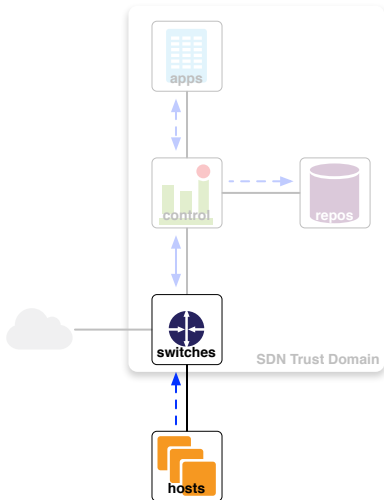
Moving to centralized management has profound implications.

- Trust loci provides greater spoofing opportunities
- Smaller number of involved systems refines target space
- Trust concentration leads to larger attack surface
- Single compromise can have outsized effects

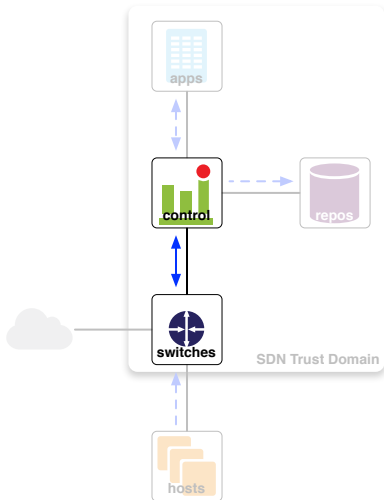


host \longleftrightarrow switch

- Confidentiality not critical
- Integrity vital
- Availability expected
- Non-repudiation nice under certain circumstances
- Authentication likewise handy at times

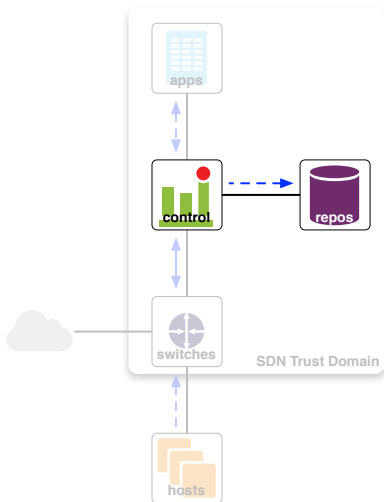


switch \longleftrightarrow controller



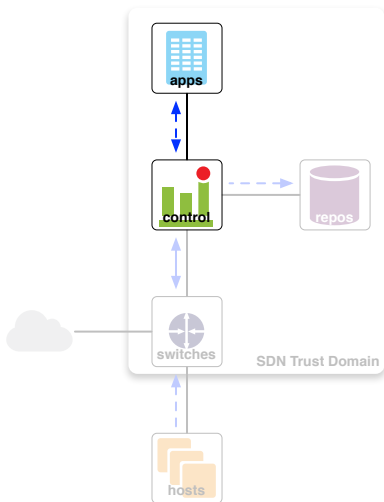
- Confidentiality only important in some edge cases
- Integrity again vital
- Availability paramount
- Non-repudiation perhaps more important
- Authentication of controllers important

controller \longleftrightarrow repository



- Confidentiality not always vital
- Integrity important, as usual
- Availability not vital
- Non-repudiation a big less important for core control plane functions
- Authentication of repositories important

controller \longleftrightarrow application



- Confidentiality based on application
- Integrity important, as usual
- Availability not vital
- Non-repudiation needs again based on application
- Authentication of certain applications important

Questions? Comments?