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dCloud Deconstructed:

Inside the World's Premiere Demonstration Platform

James Doran @packetzapper
Dustin Schuemann @dschuemann
Steven Moore @smoore_bits

BRKGEN-1030

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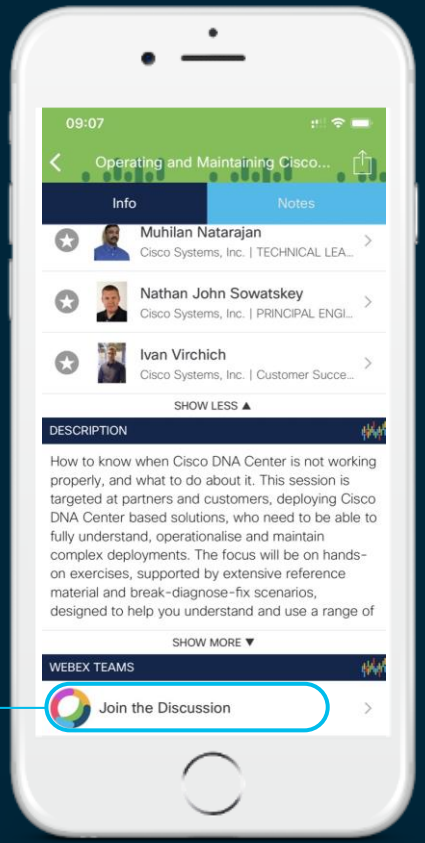
How

1. Find this session in the Cisco Events Mobile App
2. Click “Join the Discussion”
3. Install Webex Teams or go directly to the team space
4. Enter messages/questions in the team space



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Agenda

- Introduction
- The Platform
- Demo Design
  - Elements of a Successful Demo
- Demo Philosophy
  - Learning Models and Methodologies
- Q&A

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The Platform

Agenda

- FAQ
- Platform Overview
- The vPod
- New and Improved
- Lessons learned

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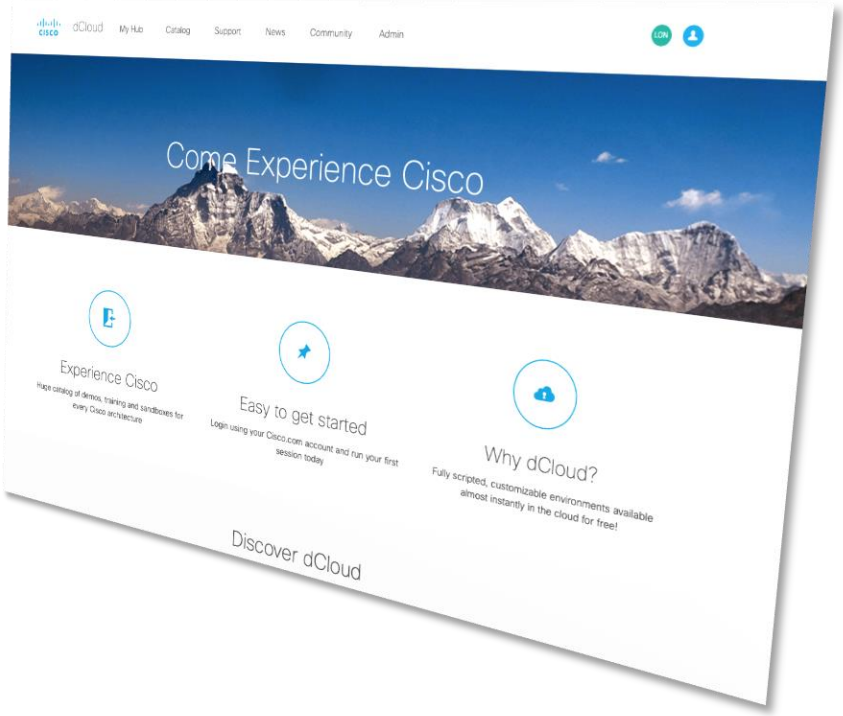
What is this dCloud thing ?

How many … do you have ?

Why a fully custom solution ?



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What is dCloud?

- Cisco's Demo Platform

- Our goal is to provide a crazy high standard of demonstrations
- Relevant, up-to-date content
- Step-by-step scripts
- Nice UI with all the necessary tools
- Fully supported (by humans)

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dCloud by the numbers...

- Sessions per year : 750,000
- VM Cycles : 4 – 5,000,000
- UCS Blades : 1,200
- Storage : 3PB
- Users : 110,000 (21,000 active)
- Data Centers : 5
- Session capacity : ~5000
- Capacity Usage : 80%

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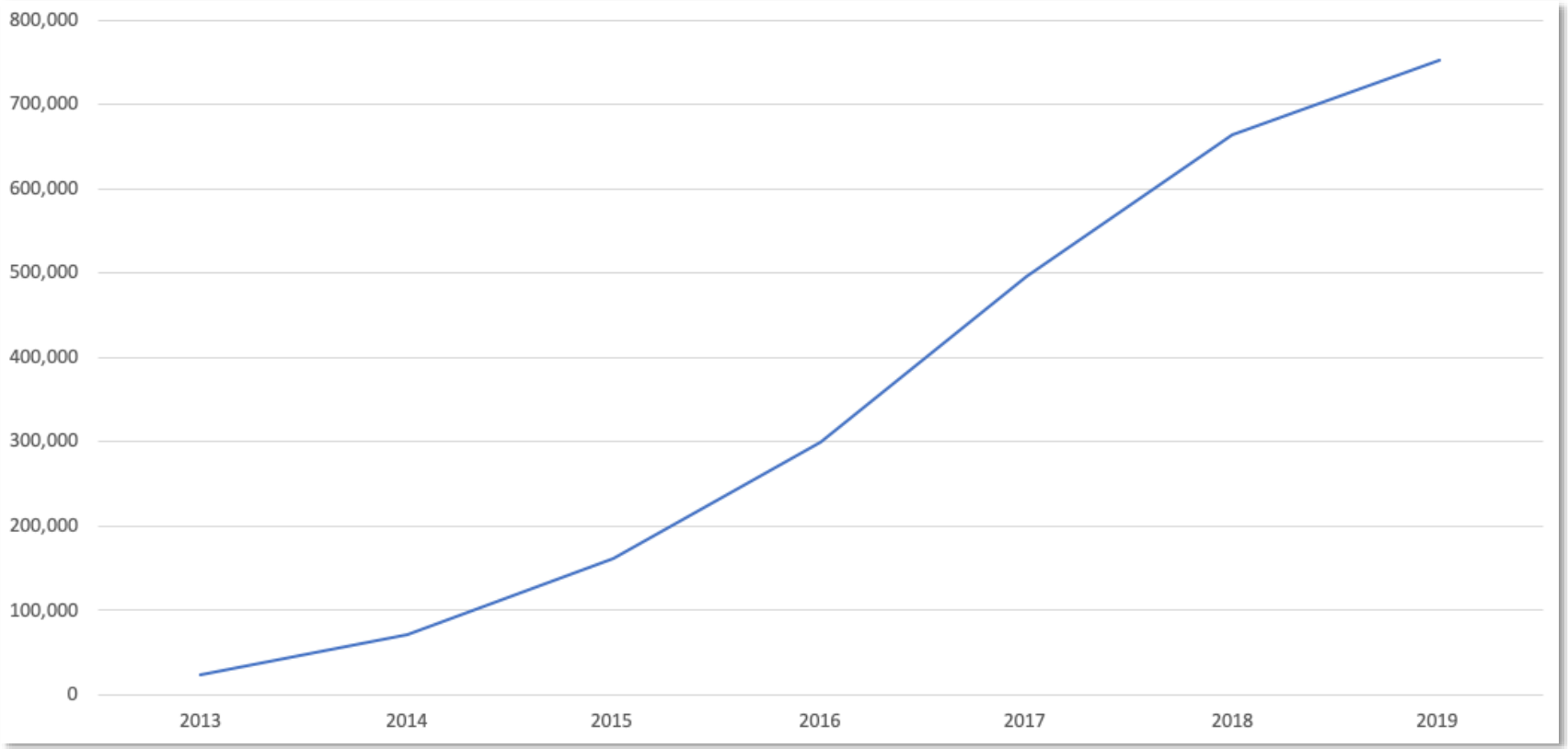
Session Growth YoY



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Why a custom solution ?

- No feature-complete off-the-shelf solution for demos
- Coding to patch those gaps is hard
- Custom vendor patches usually means nightmare upgrades
- Vendors kept getting bought by competitors

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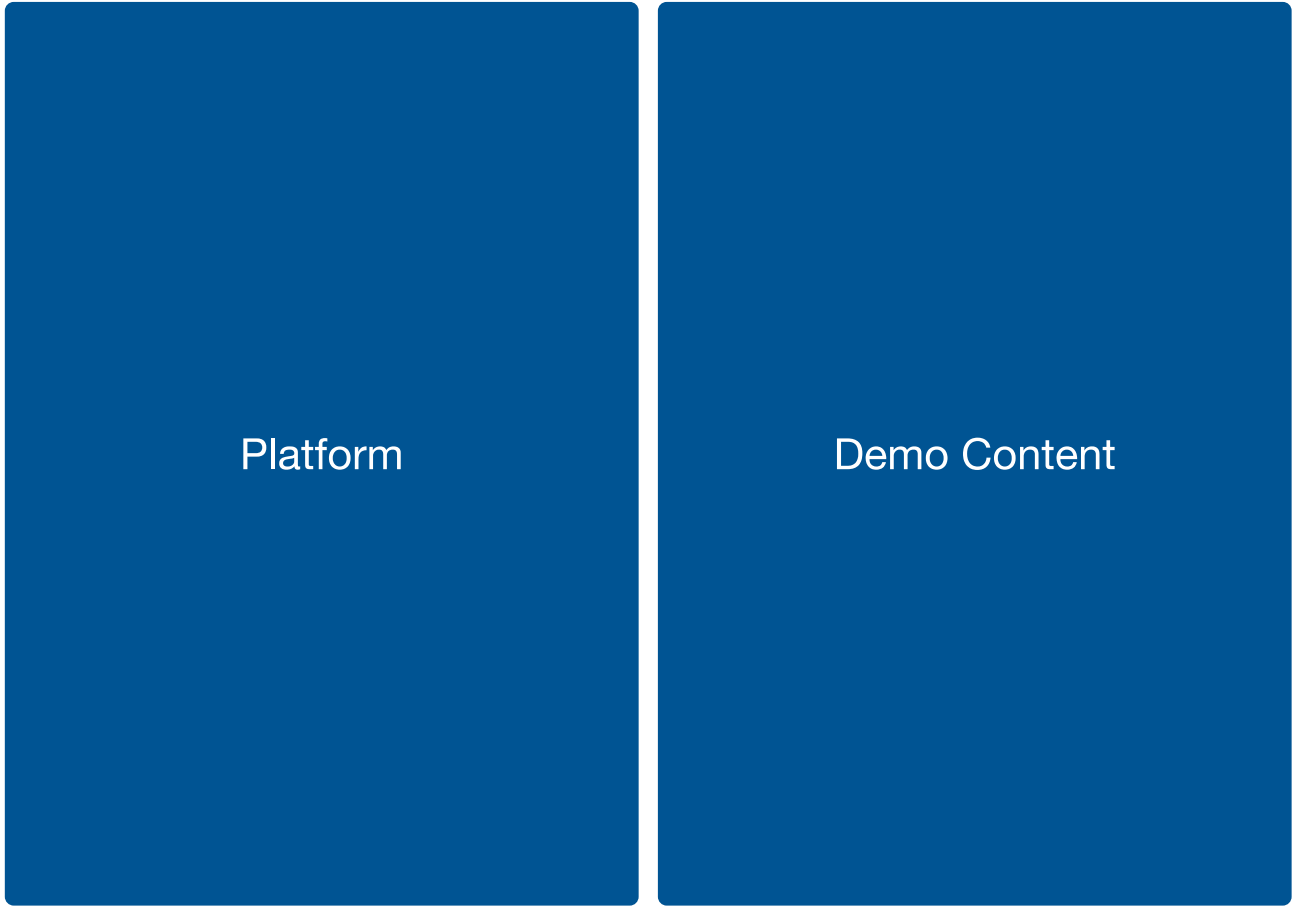
Platform Overview



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Platform

Demo Content

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dCloud Tech Stack(s)

- Lots of tech stacks….
  - Platform
  - Demo Environment
  - Software development
  - Software Testing
  - Ops Tooling
  - Metrics and telemetry
  - Etc.

- We aim for simple and standard

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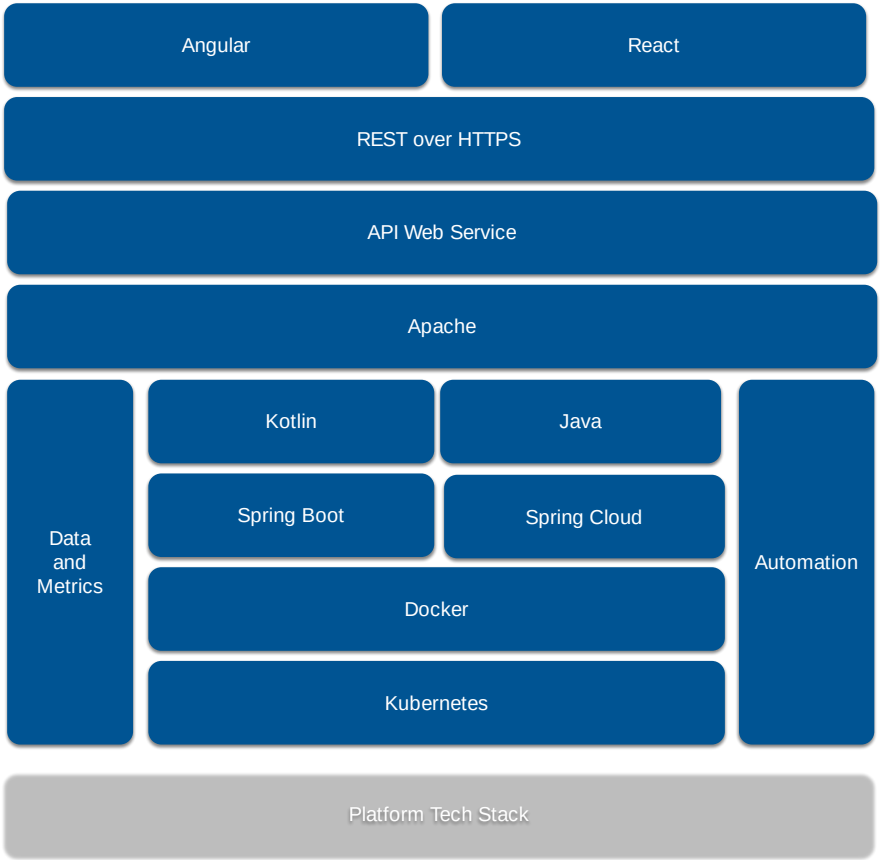
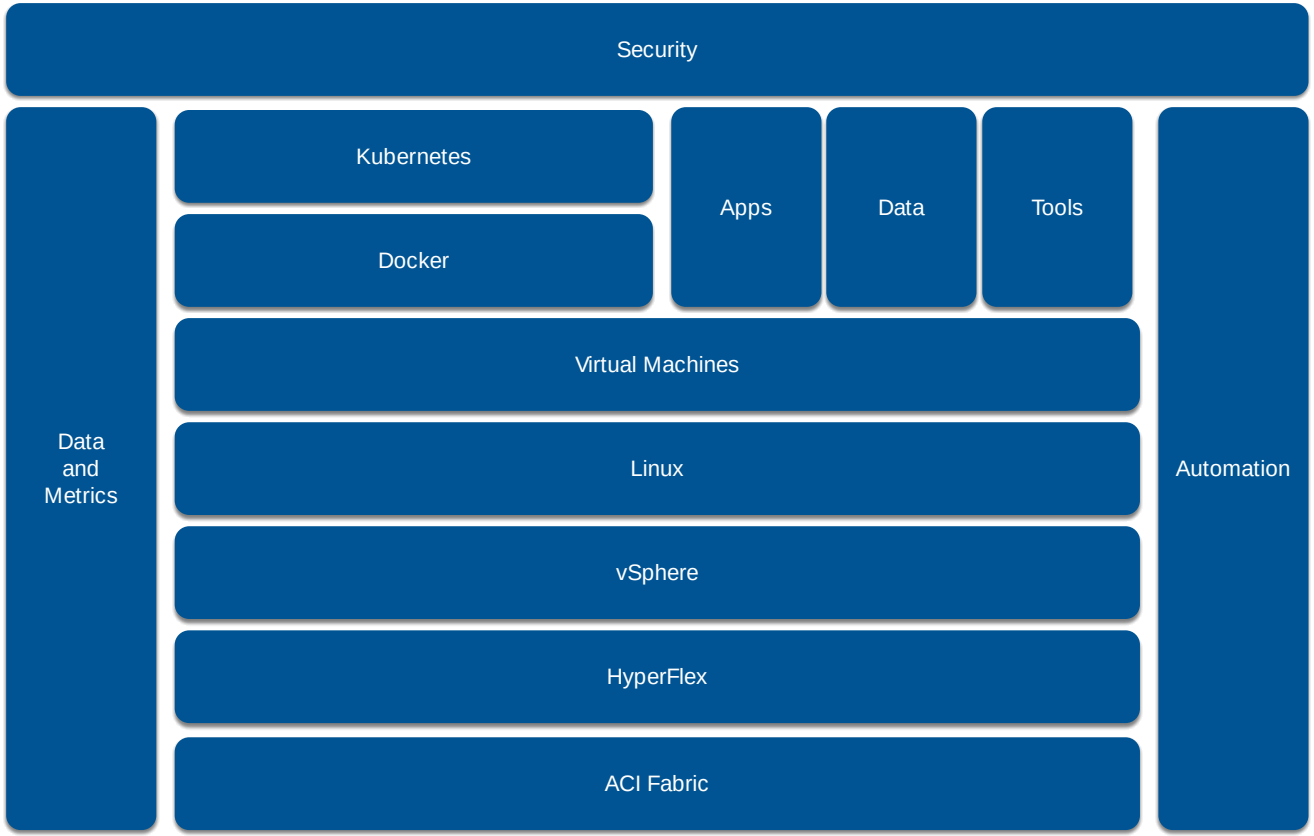
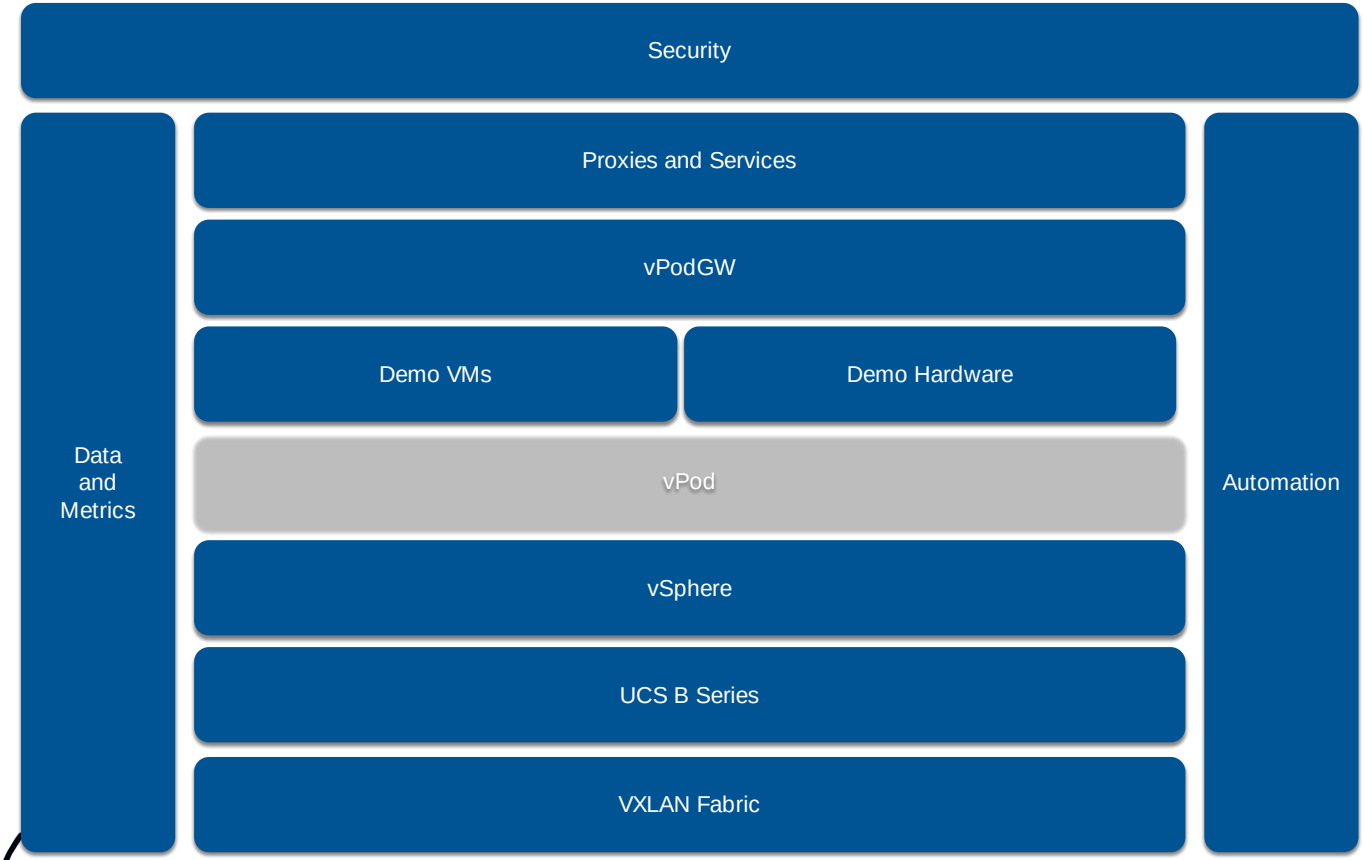
Software Tech Stack



Platform Tech Stack



Content Network Tech Stack



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Content Network Overview

- Demo Content Environment
- Simple, fast and automation friendly
- Very high churn
- 100% boot storm
- Five million VM cycles p/a

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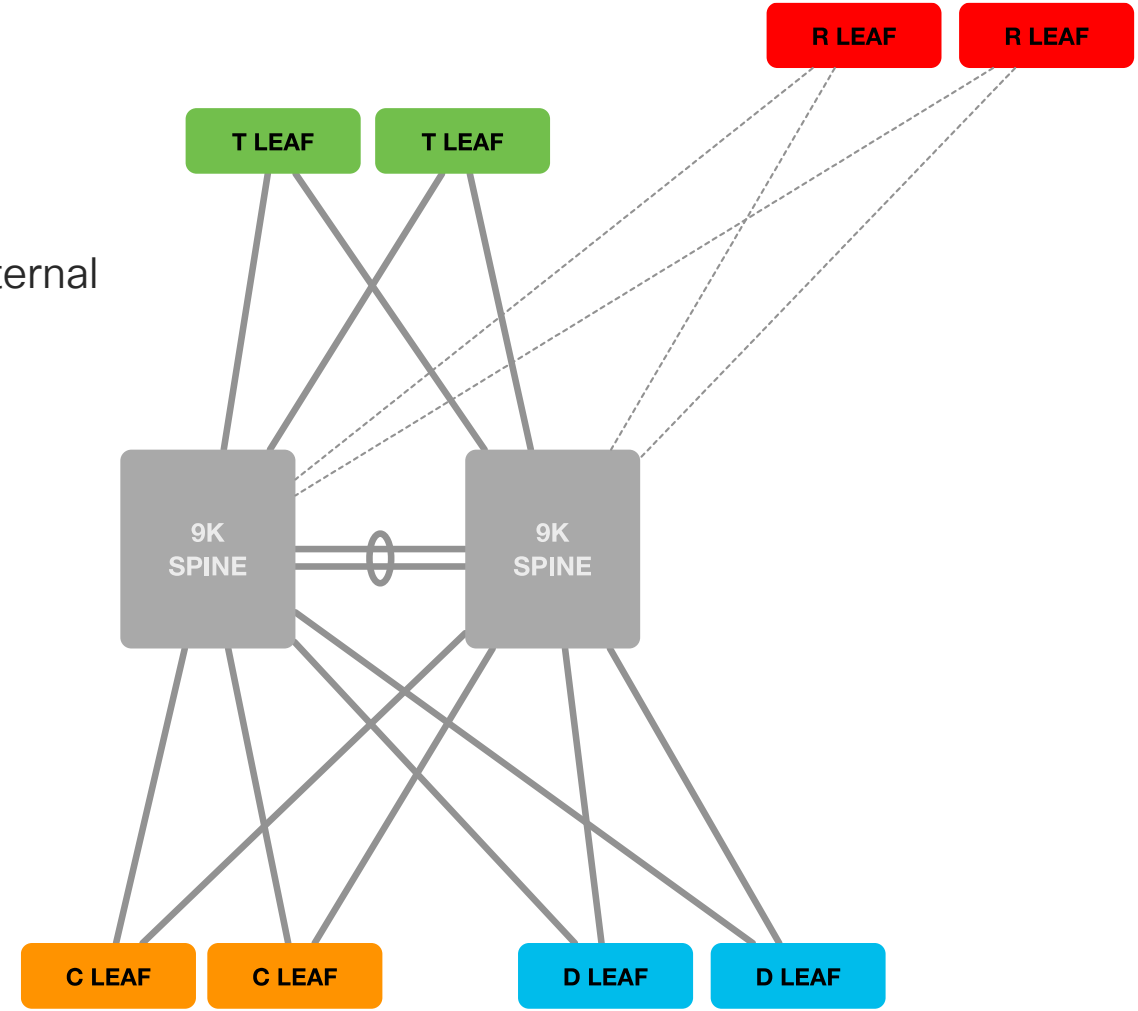
- **C Leaf**: Compute
- **D Leaf**: Demo Devices
- **T Leaf**: Transit to Services / External
- **R Leaf**: Remote Leaf



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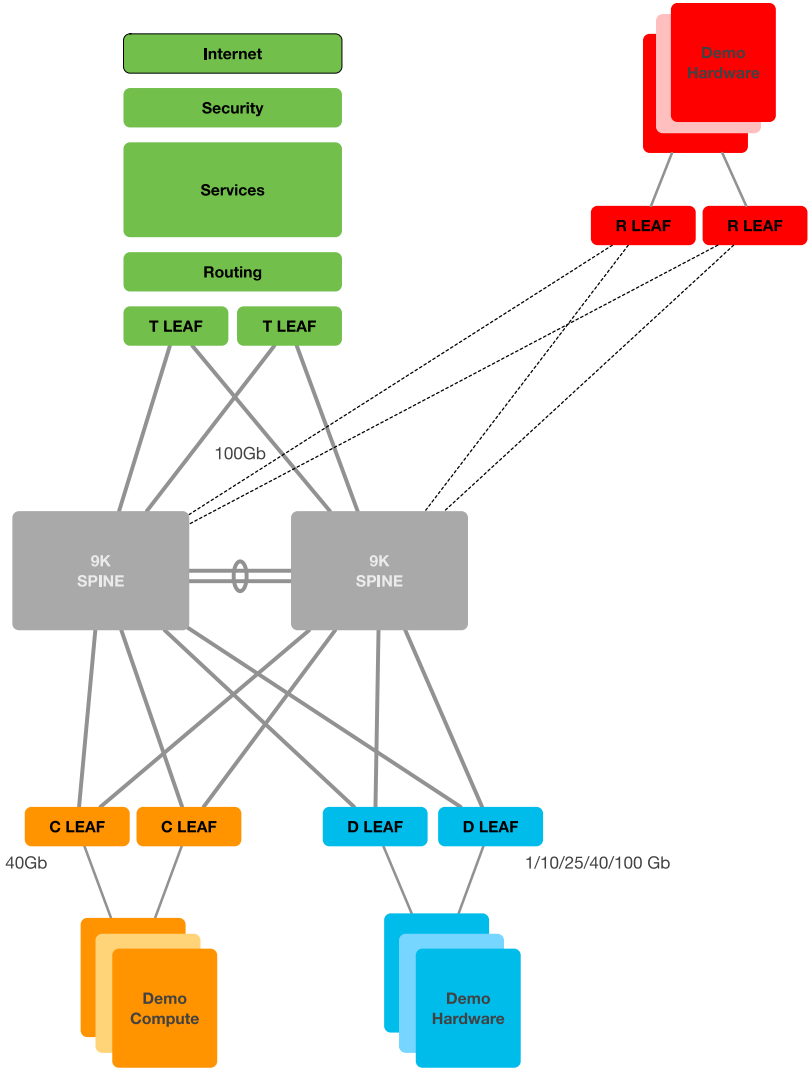
- Simple Leaf Spine VXLAN Fabric
- Designed for performance and automation
- All Nexus 9000
- Multiple Leaf types

- Uplinks all 100Gb
- Compute all 40Gb
- Devices connectivity @ 1/10/25/40/100

- Remote Leaf for external equipment
- Heavily Automated C, D & R Leaf



Core Automation

- Core automation drives demo start, setup, save and tear down
- All Cisco code
- 200,000 lines of backend java
- Written from ground up to support demo-type use cases
- Heavy API leverage (Cisco, NetApp, VMware etc.)
- Traffic engineering
- Highly concurrent
- Mostly Java (Some C++)

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The vPod

The vPod

- Isolated environment that hosts a demo session
- Fully instantiated on demand
- 100% stateless
- No association to the demo content running in it !!
- Resources dynamically allocated as the demo is spun up
- vPodGW provides dynamic routing, NAT, DHCP, DNS, NTP, Firewall etc.
- Scale very well
- Probably one of the most successful parts of the original design

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vPod Topologies

- The vPod has been designed to make it easy for demo developers to get creative
- As developers are not locked into any pre-defined topologies, some very advanced infrastructure can be built
- Lets look at some examples.....

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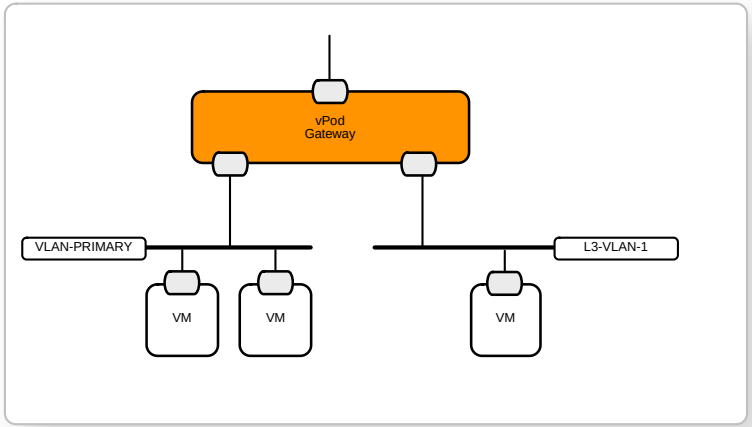

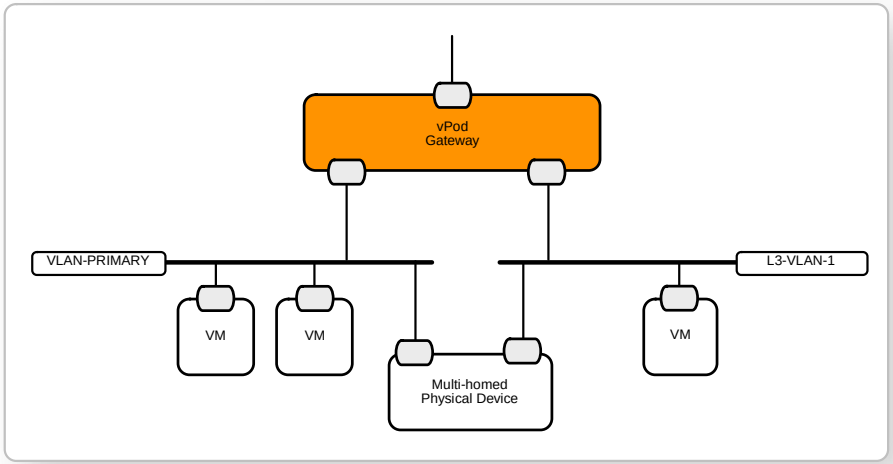

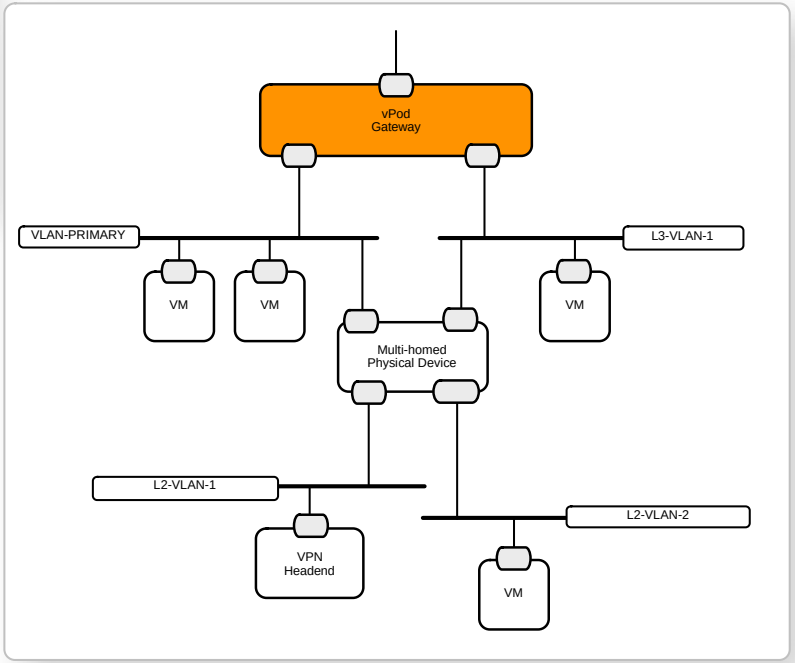

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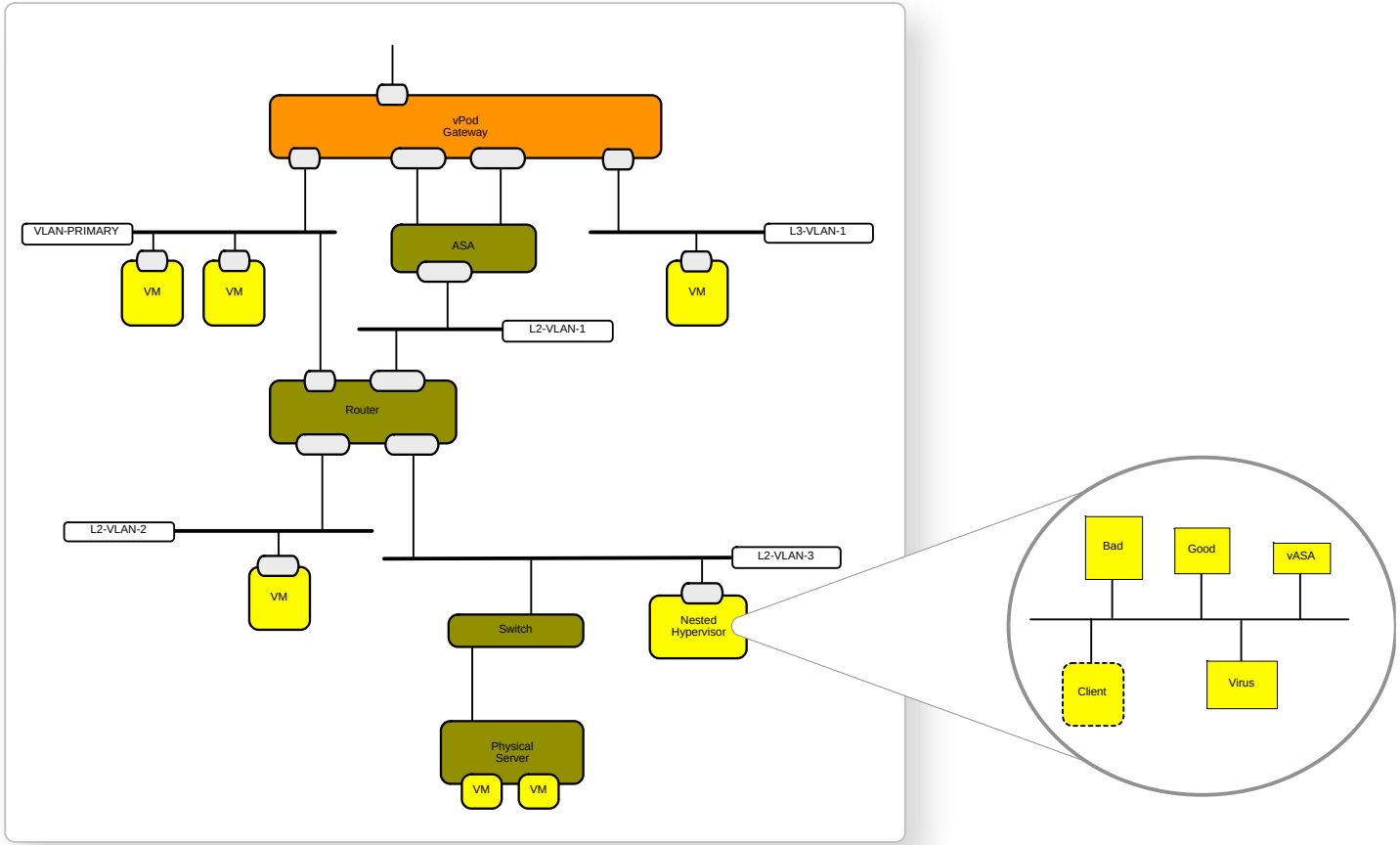

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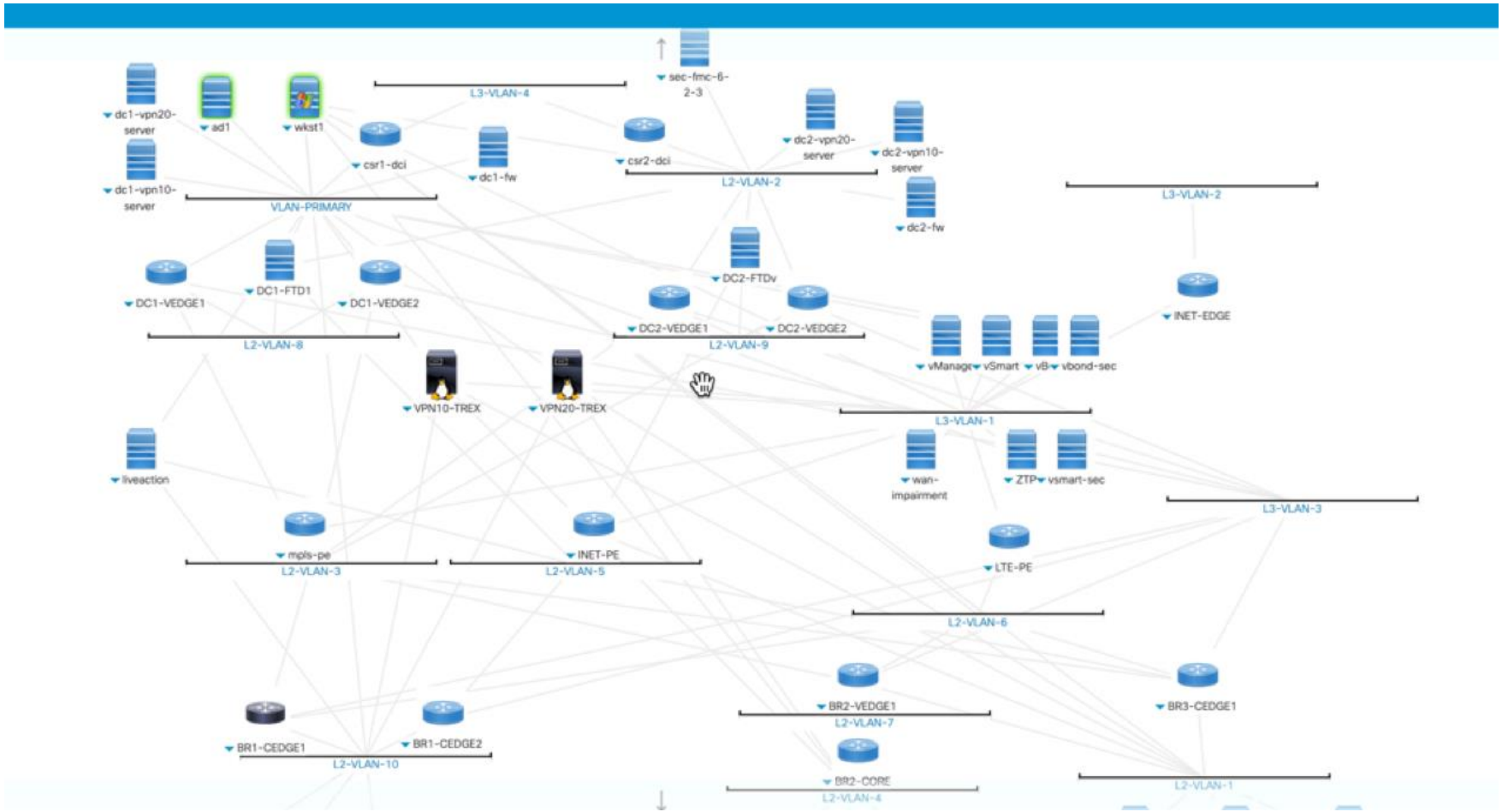
Here's a real-life example of one that Dustin built....



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Starting a demo session

- dCloud Demos have a lot of moving parts
- Starting a session is like directing an insane symphony
- Lots of things have to happen in a very particular order
- Automation stability is very important
- Heavy stable concurrency is a must
- Rollback is complicated, so we typically just delete and do over

- Lets take a look at some of the steps..

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Check and allocate resources

Create a vPod

Create a vPodGW

Allocate VLANs and VXLANs

Configure vSphere

Configure Storage

Create Virtual Machines

Add VMs to vSphere

Pull hardware from pool

Configure D/R Leaf Switches

Build out the hardware

Configure transit routing

Configure VPNs

Configure Directory Services

Configure DNS

Configure DHCP Pools

Configure eMail routing

Configure Terminal proxies

Configure vCUBEs

Start Virtual Machines

Ensure correct start order

Check VMs have started

Execute post-start Automation

Release Session to user

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New and Improved
(Since last time)

- Hardware power reset (UI/API)
- New VM Console access
- Hardware Automation Enhancements (UI/API)
- New Hardware Console (UI)
- 13 new blocks of M5 blades
- 100% Flash Storage
- New workload scheduling mechanism
- Platform segmentation
- Major catalogue changes

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Lessons Learned

- So many…
- Demo Engineering is a career rather than a hobby!
- Hire the right engineering team
- Simplicity has an elegance all of its own
- Working beats supported every time
- Ensure demos are integrated into your ‘bid to bill’ process
- Listen to your customers and stakeholders (very carefully)

- And my last piece of advice…….

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Don’t build your own demos..

We did the hard work, so you don’t have to.

Cisco dCloud

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Elements of a Successful Demo

Answer these questions first.

- What are the customers business drivers?
- What do you want the customer to walk away with?
- What story do you want to tell?

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Context is Everything!

Good Story	Bad Story
• Do make relevant to customer • Do focus on business outcomes • Do practice	• Don’t focus on a specific widget • Don’t use a guide in front of customer • Don’t present a data sheet

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How can dCloud help your experience!

- Customize existing content in dCloud.
  - Make the demo tell a story for you!
  - Build it once and save it for easy consumption going forward.

- Work with our team to build something more specific and customize beyond what is already available. (Do we want to mention this?)

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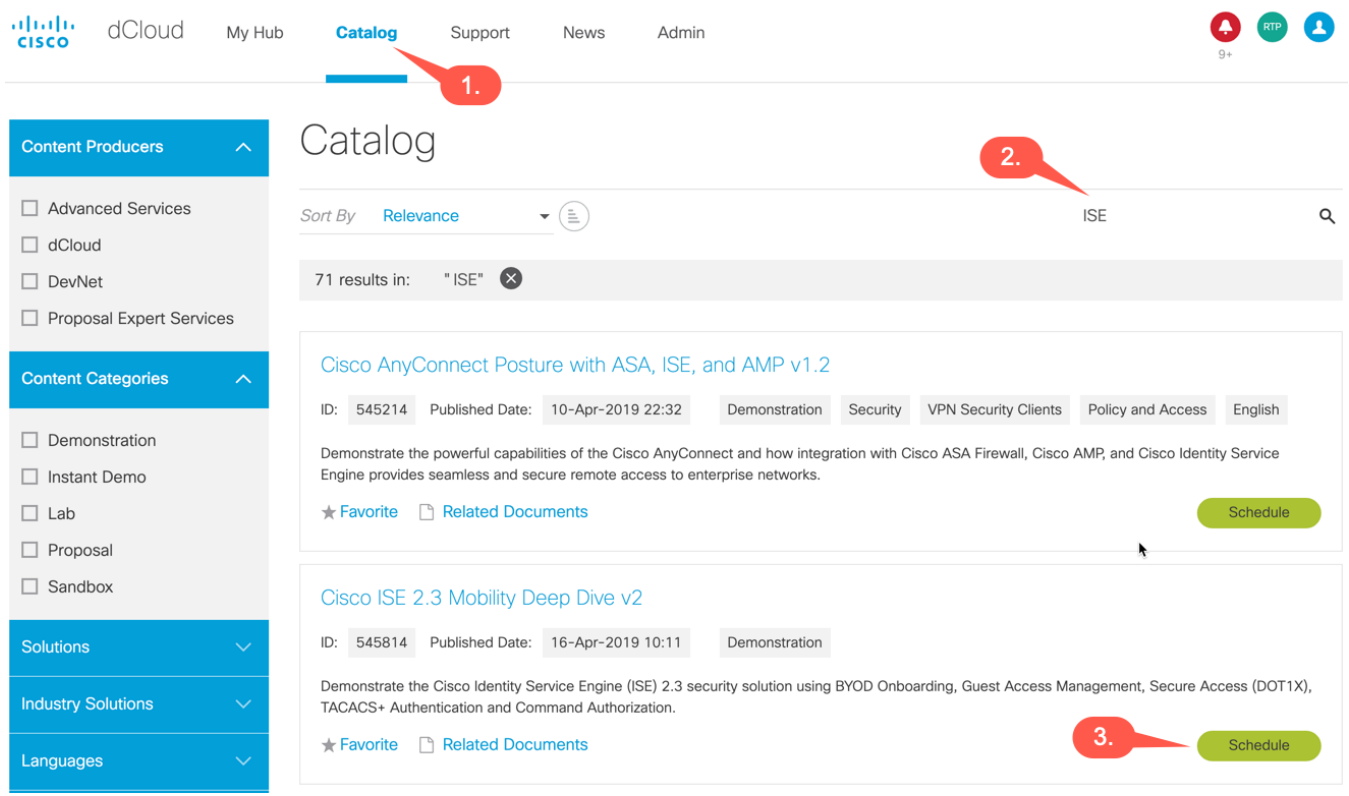
Demo

Schedule content you want to customize.



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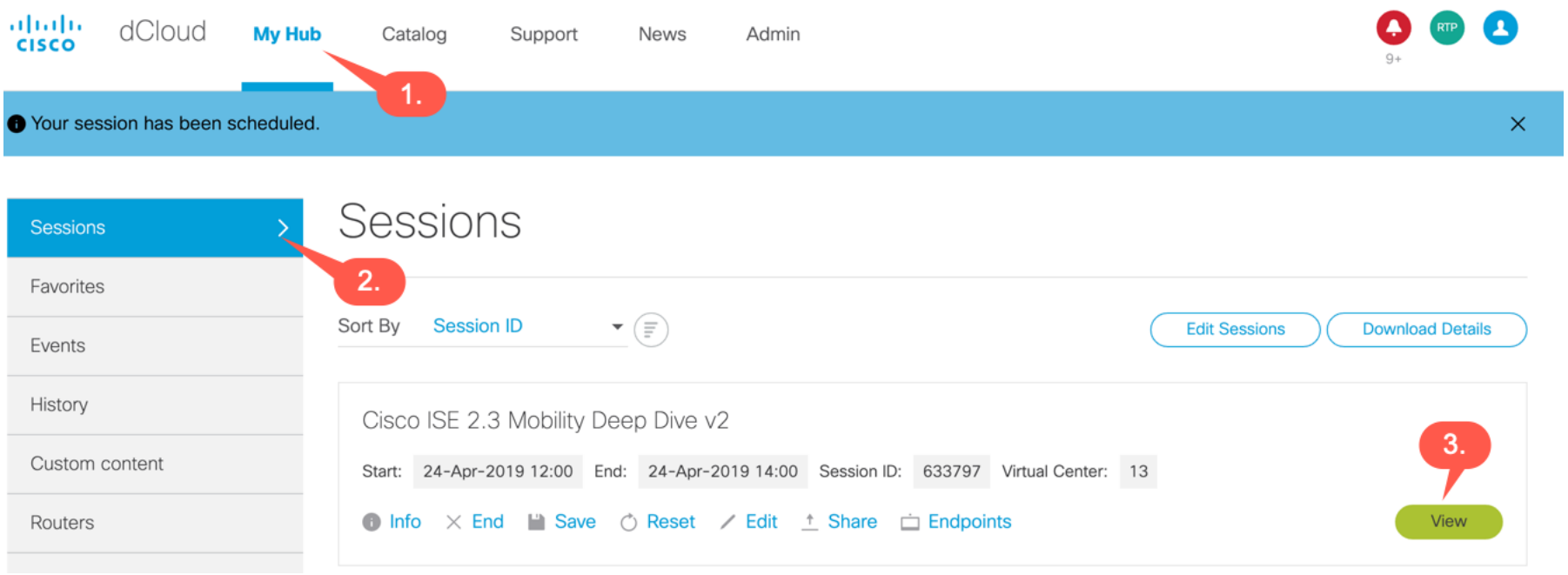
Access session you want to customize.



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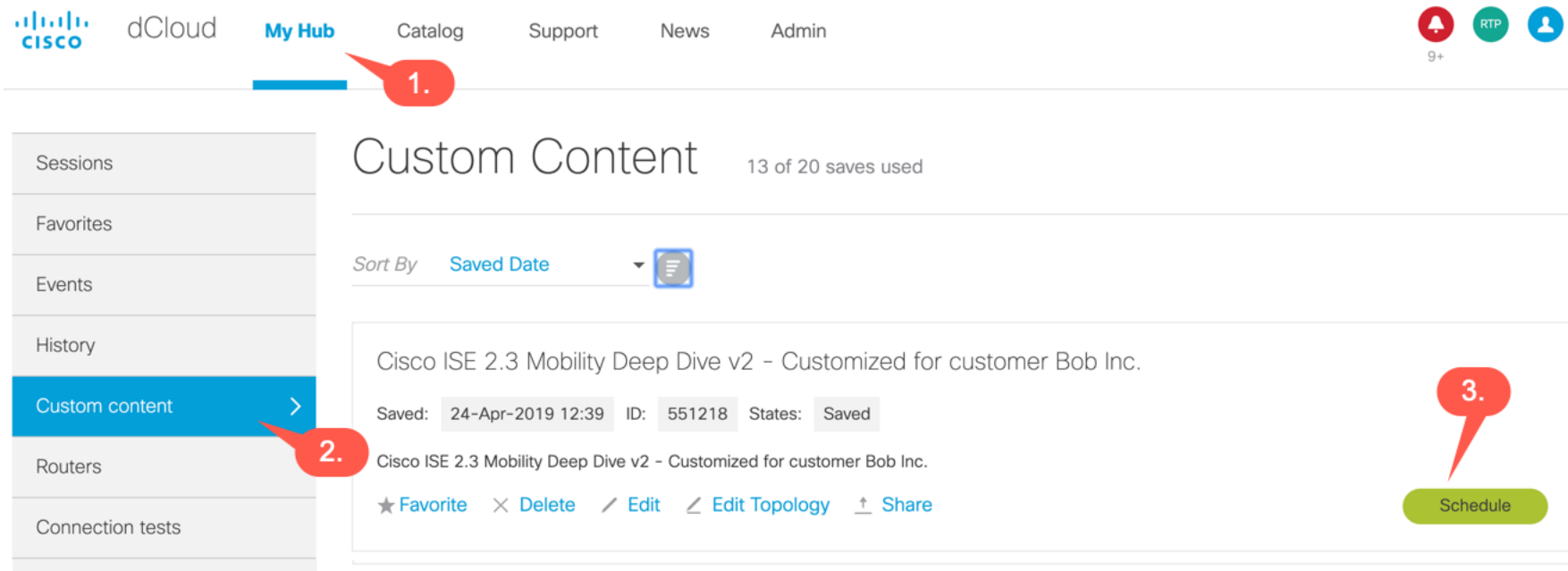
Saving customized content.



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The Philosophy of Demonstration

Not having heard something is not as good as having heard it; having heard it is not as good as having seen it; having seen it is not as good as knowing it; knowing it is not as good as putting it into practice.

Xun Kuang, Xunzi

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Elements of an Engaging, Engineering, Story

- Creating an engaging demonstration feels a bit like …

- When in actuality, it is built upon:
  - Engineering Empathy
  - Educational Methodology
  - Epistemological Objectives
- How do we build a message and experience based on these principles?

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Engineering Empathy
Connecting with the Technical Audience

- Empathy:
  - Ability to relate, feel, and connect with your audience
- Engineering Personae
  - Always looking for solutions
  - Tools for the toolbox
  - Efficiency, Efficiency, Efficiency
  - Technical Value MUST precede Business Value
  - Problem – Solution
- How to build empathy with this audience?

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Engineering Empathy

- *If I Understood You, Would I Have This Look on My Face?: My Adventures in the Art and Science of Relating and Communicating* by Alan Alda

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Educational Methodology

- When teaching children, they have little to no context.
- Adults pass every new fact through their grid of understanding
- Adult Learning Emphasizes
  - Self-directed approach
  - Problem Centered
  - Experience Driven
  - Internally Motivated
- Context is Crucial!

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Educational Methodology

- Pedagogy – instruction of children
- Andragogy – instruction of adults
- Leaders in this field: Malcolm Knowles, Edward Thorndike, Edward Lindeman

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Epistemological Objectives

- Epistemology – a big word for how we come to know
  - What is a rational belief?
  - How do we create content with a purpose?
- Philosophers and Theologians have wrestled with this for ages
- Progression of Belief:
  - Factual Knowledge – What is it?
  - Intellectual Agreement – How does it work?
  - Experiential Confidence – How does it work for me?

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Epistemological Objectives

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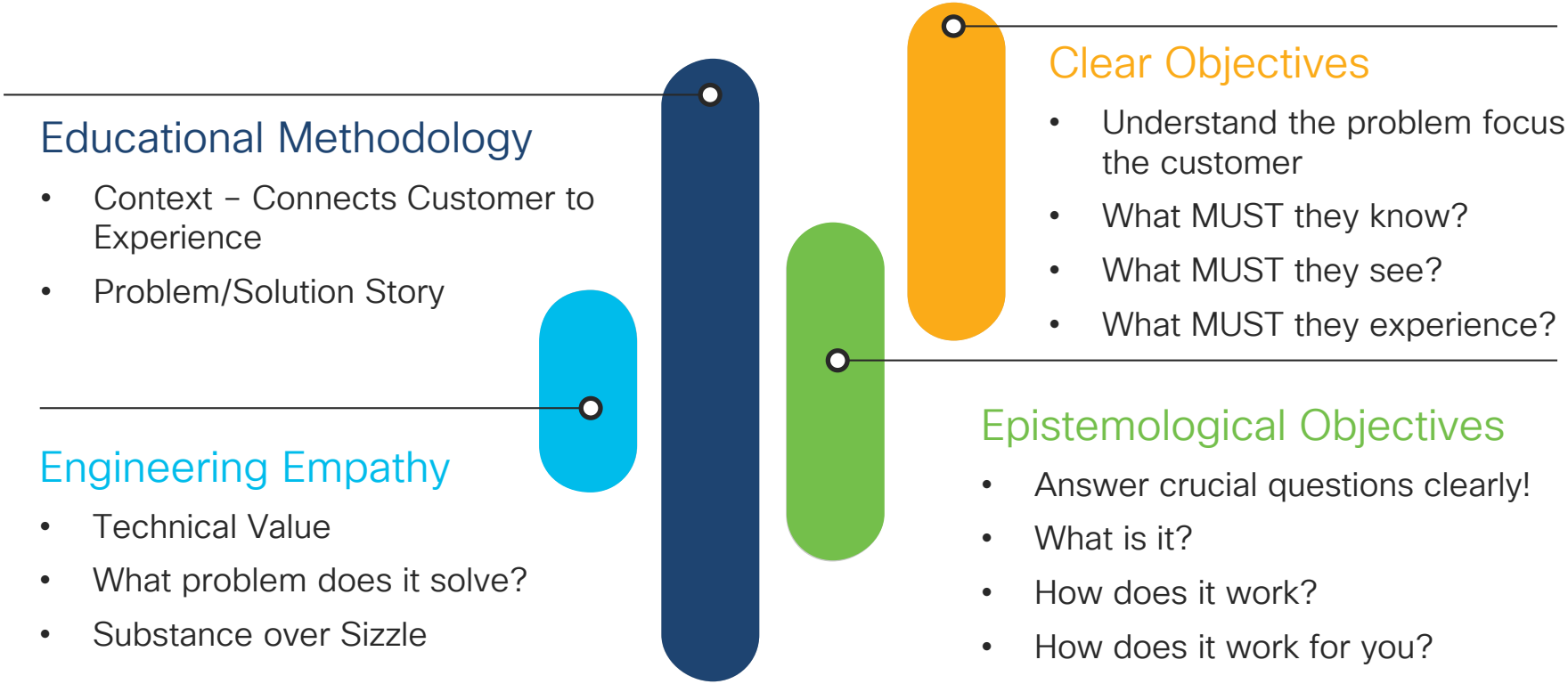
Bringing It All Together – A Good Demonstration



Educational Methodology

- Context – Connects Customer to Experience
- Problem/Solution Story

Engineering Empathy

- Technical Value
- What problem does it solve?
- Substance over Sizzle

Clear Objectives

- Understand the problem focus of the customer
- What MUST they know?
- What MUST they see?
- What MUST they experience?

Epistemological Objectives

- Answer crucial questions clearly!
- What is it?
- How does it work?
- How does it work for you?

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Summary

- Reminders
  - dCloud Platform Innovation – power in the platform
  - Elements of a great Demo experience
  - Create Compelling, Engaging Engineering Stories
- Experience dCloud and the power of Demonstration
  - If you're familiar:
    - You have knowledge and tools to enhance your experience
  - If you're new to dCloud:
    - Please log in, run a demo, experience it firsthand
  - Demo Zone: https://www.cisco.com/c/en/us/products/demos.html

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