Horizon Moderated Closed Card Sort Findings

HFR 08-15

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Objectives

Why do another card sort?

- The goal of this research was to validate the 5 category model, as well as the category names, that were arrived at based on the earlier open card sort of the top of the tree Horizon items.
  - This data can then be used to *help inform* future IA decisions.

- A moderated closed card sort was used in order to be able to probe on why participants were making the choices they were making, assess their interpretation of items, and identify any cards for which multiple categories were being considered viable.

Method

Participants

- 13 individuals participated in this study.
  - After the initial 3 participants, 1 of the category name was modified.
  - Therefore, data from 10 participants was included in the final analysis.

- A global sample of participants was recruited through direct emails.
  - Participants were selected from a distribution of individuals who had indicated that they would be willing to participate in OpenStack research activities.
    - 1 was recruited through personal contacts.
  - All were comfortable conversing in, and reading, English.

While we tried to recruit a range, we focused on users with Horizon experience.

- 11/13 had used Horizon to create an instance in the past three months.
- 10 worked or studied in environments where cloud computing services were offered.
  - All had experience with at least 1 cloud service provider.
- Participants had a range of roles, including software development, software architects, CS students, system engineers, and support.

- Participants all received a $25 Amazon gift card as a thank you for their participation.

Method

Procedures & Materials

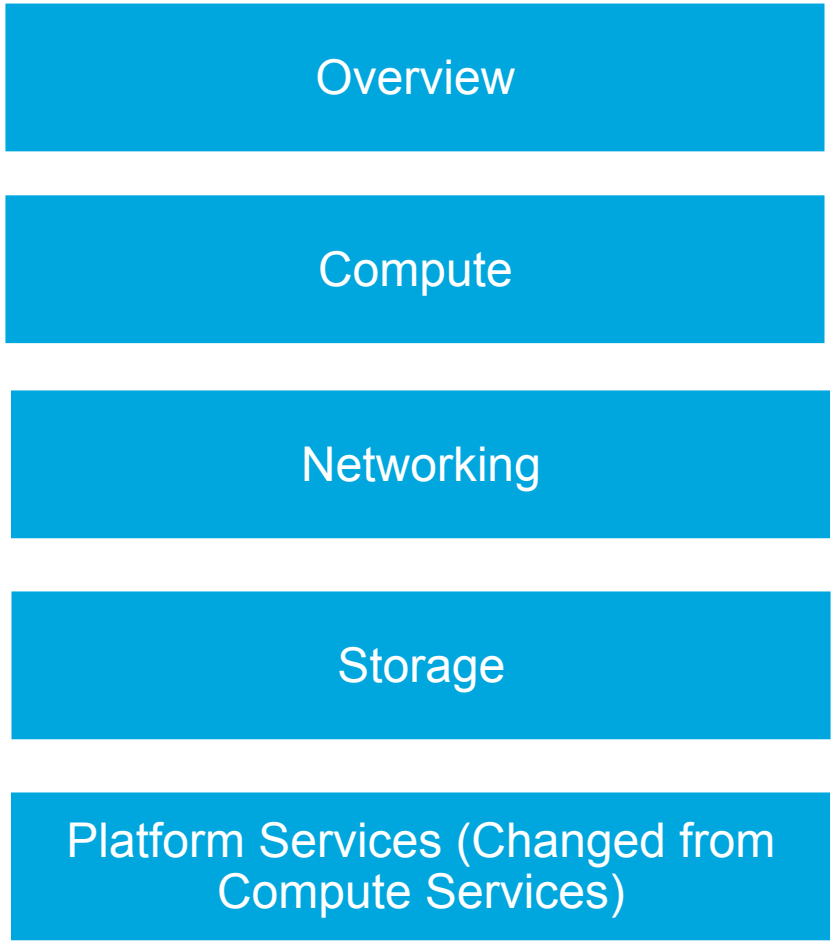
- Participants completed a brief demographic survey and introductory interview, and then the open card sort.
  - The sort was provided using OptimalSort.
  - A verbal protocol was employed during the sort.
  - After sorting all cards, participants engaged in a brief debriefing interview.
    - This included a review by David Lyle on the intent of the Platform Services category, and participants' thoughts about its utility as a category.

- 18 cards were used in the sort.
  - These were the same cards used in the earlier, open sort.
  - These cards represented the current top-of-tree for Horizon, or were recommended by the Horizon PTL, David Lyle.
    - Therefore, the cards were presented to participants as a term definition, followed by the term itself.
    - The definitions were written by Tiffany Bockman, and reviewed by David Lyle.
- 5 categories were used
  1. Overview
  2. Compute
  3. Storage
  4. Networking
  5. Compute Services
     - This term was changed to "Platform Services" based on finding from the 3 initial participants.

Results

Category Confusion

- Generally participants found the category names intuitive, with the exception of “Compute Services”.
  - *“Compute versus Compute Services seem like the same thing to me.”*
  - Initial participants therefore tended to avoid this category
- The category was renamed “Platform Services” for the final 10 participants.
  - This helped, though some found the name “a little cloudy” or “vague”.
    - They felt it could be “admin stuff”, or aaS.
    - However 9/10 correctly guessed its meaning.
      - Further, 1 who had trouble placing Stacks and Data Processing felt that both fit well in Platform Services, once the category was defined for him.
    - Looking at the cards helped interpretation.
  - When debriefed, most liked the idea of this category.



Popular Placements Matrix

	Networking	Storage	Overview	Compute	Platform Services
VPN	100%				
Routers	100%				
Firewalls	90%				10%
Load balancers	90%				10%
Topology	80%		20%		
Floating IP	80%			20%	
Networks	100%				
Security groups	70%			20%	10%
Object storage		100%			
Volumes		90%		10%	
Dashboard			90%		10%
API Access			70%		30%
Instances				100%	
Key Pairs			10%	70%	20%
Images		30%	10%	50%	10%
Stacks				10%*	90%
Database		10%		10%	80%
Data Processing (Hadoop Clusters)				20%*	80%

* 1 expected to move these items to Platform Services, once the intent of the category was explained.

The Variable Variables

Images

- Images were the most challenging item for participants to place.
  - Most were torn between placing them in Compute and Storage.
    - However, 5/10 felt that the best fit was in Compute.
    - 3 selected Storage, because, “Images are about storing data”
  - 1 novice selected Platform Services
    - The definition’s reference to “other SW” made him think it could be a service.
    - He also felt Compute was a viable placement.
  - 1 selected Overview
    - *“I’d place it in Overview because the first thing I look at when I look at everyone's cloud is what can this cloud do? What are my options?”*

An image contains the operating system and other software for launching a virtual machine.

The Variable Variables

API Access & Key Pairs

- 7/10 placed API Access in Overview because of its function as a high level referent.
  - They also felt it was a useful item to have on the homepage.
  - 3/10 placed in Platform Services, though 2/3 also suggested Overview.
    - *"It's a bigger picture, so it could go in Overview, but it could also go in Platform Services because the description sounds like it is how you mange the services."*
  - 2 were biased by the inclusion of the term "services" in the description.
- 7/10 placed Key Pairs in Compute, based on its function.
  - *"This is about how you access the Compute resources."*
  - 2/10 placed it in Platform Services.
    - Both were had limited cloud experience and limited or no Horizon experience.
    - They felt that key pairs modified something in a service.
  - 1 placed it in Overview because functionally she felt that this was something that users would want to see right away.

OpenStack services and service end points are displayed in a table in the Horizon User Portal for easy reference (API Access).

Key pairs can be injected into a virtual machine at launch to grant uses SSH access to instances hosted on the virtual machine. A single key pair can be used with multiple instances within the same project (Key Pair).

The Variable Variables

Security Groups

- 7/10 placed Security Groups in networking, due to its content.
  - *“I want to keep all the networking stuff together.”*
  - Compute was selected by 2/10, though they noted that Networking was also logical.
    - *“It has networking information, but it will modify something about the instance. So compute.”*
  - 1 placed it in Platform Services.
    - This was a novice user, who also felt that Networking would be a logical placement.

Security groups allow administrators to create IP filter rules that determine network traffic for instances. Rules are project specific (Security Group).

Resulting Organization

Networking	Storage	Overview	Compute	Platform Services
VPN	Object storage	Dashboard	Instances	Stacks
Routers	Volumes	API Access	Key Pairs	Database
Firewalls			Images	Hadoop Clusters/Data Processing
Load balancers				
Topology				
Floating IP				
Security groups				
Networks				

Conclusions

- The closed sort appears to validate the findings from the open sort.
  - Most items were grouped consistently across participants.
  - However, alternative names for “Platform Services” should be explored.

- Further, the verbal protocol helps us overcome some of the limitations with the closed sort methodology.
  - We are able to understand why people grouped items the way they did, and identify points of confusion.

- However, the groupings may not be the most useful in terms of task performance.
  - How people organize abstract concepts, versus how they need and encounter them in the flow of task performance, can differ.
  - Therefore, these categories may not results in the greatest usability.

Next Steps

- Follow up with a usability study with the proposed IA.
- This is done to determine if the categories hold up in a task-based context.
  - Consider A/B testing for Images' location.

Thank you

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