

SEARCH ENGINE FOR ROUTERS DESIGN DOCUMENT

You Mo 9/23/2019

OVERVIEW

Design a search engine for routers on a web application to help users easily locate one device they are looking for. A router has many properties, like router name, group name, status, IP address etc. When user types certain keyword, this search engine should be able to show users search results that include this keyword in a clear and comprehensive way.

i *Noted that the exercise provides limited information, some background, use cases, conditions are made based on my own assumptions and experience. In a practical design case, this information should be collected through a comprehensive investigation.*

GOAL

1. Problem

Multiple routers are setting in a building's network system. They may have different properties, configuration, groups etc. It is hard to find and manage the routers by just referring to the records or by memory.

2. Project Goal

Help users efficiently locate the device they are looking for.

USER

1. Who are the users?

Operation and maintenance staffs for a University campus or company network system.

2. User's needs and pinpoints

- There are hundreds of routers in the network system, I want to locate a router with the minimum amount of time.
- I can't tell the difference between routers if I don't check the properties in detail. I want to know routers main features at a glance.

3. Use cases

What are the scenarios when the user starts to use this search engine?

- I want to locate the router that I frequently accessed.
- I want to locate the router that I accessed last time.

- I can remember the exact properties of the router. I want to search by properties.
- I can't remember the exact properties of the router. I know the exact spelling of a keyword **OR** I don't know the exact spelling of a keyword.

4. What will users do after they get the search result?

- Check the router status.
- Manage and change the router configuration, settings.

CONDITION

This part is for analyzing the development resources and technical constraints. Normally in a practical design process, I will communicate with the development team, PM to confirm the conditions so as to ensure the design strategy is reliable.

DESIGN

1. Design Goal

Help the user minimize the search time. Layout the routers in an understandable way.

2. Design Strategy

To achieve the design goal, I deduced the following design strategy based on the above user analysis.

Before search:

- Provide search by properties.
- Display routers accessed frequently by default.

During search:

- Provide historical searched keywords in the dropdown list.
- Provide intelligent anticipation while typing.
- Specify how the items in the dropdown list are associated with the keyword (eg. by its name or group name).

After search:

- Display with visualized router icons or logos that can help user quickly identify the routers.
- Display the results in categories: routers, groups.
- Provide suggestions if couldn't find a result.
- Use content focused, clean and clear layout.

3. Design Solution

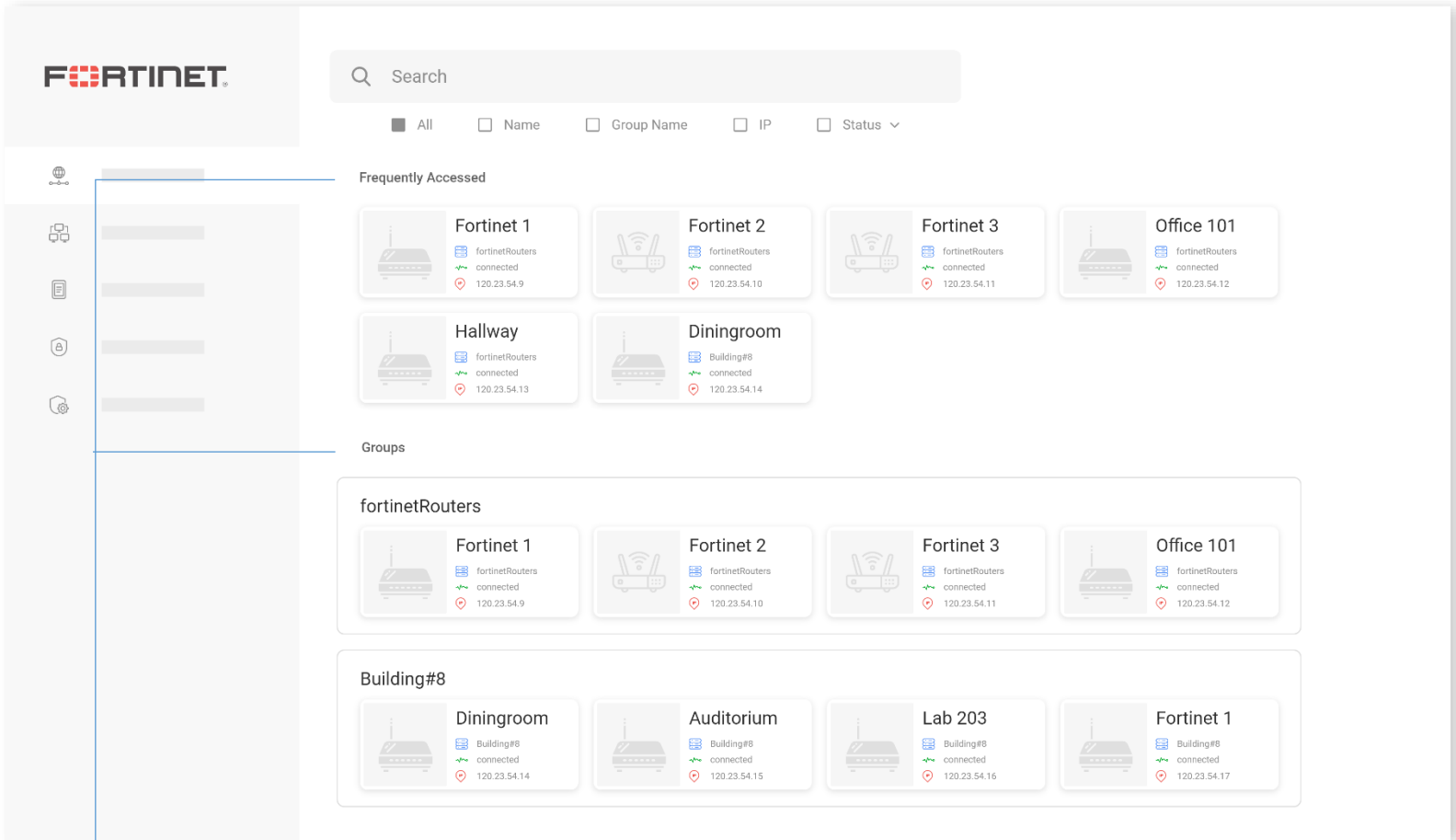
Based on the design strategy, I created the following table to help me be clear with all the situations and the corresponding interaction feedback, information layout during a search task. By filling in the table, the detailed design solution came out.

User behavior	Search box state	Interaction feedback	
		Dashboard	Dropdown list
N/A	Default	<ul style="list-style-type: none"> • Display routers and router groups frequently accessed. • Provide property filters to allow the user to search by properties 	N/A
Single click the search box without input	Active	N/A	Display historical searched keywords and remove icon. Format: <ul style="list-style-type: none"> • Router icon, router name, follow up with properties in the second line. • Group icon, router group name. • IP icon, IP address, follow up with properties in the second line. • Search icon, keyword (if the keyword is not associate with any property)
Incomplete input in the search box	Active	N/A	Display prediction keyword items in categories. Follow the above format, highlight the prediction part.
Complete input in the search box	Active	N/A	Display related keyword items in categories. Follow the above format, highlight the keyword part.
	Search completed	Display the result routers, and router groups	N/A
Fuzzy input in the search box (eg. fortynet)	Active	N/A	Display possible keyword items in categories. Follow the above format, highlight the possible keyword part.
	Search completed	<ul style="list-style-type: none"> • Display “Couldn’t find the result for ‘fortynet’. Are you looking for ‘fortinet?’”. • Display results for ‘fortinet’ as suggestion. 	N/A

REALIZE

Design Tool: Adobe XD

1. Default Screen



By default, display frequently accessed routers and router groups to allow quick access.

2. Active search box without input

FORTINET

Search

- Fortinet 1
fortinetRouters, connected, 120.23.54.9
- Office 101
fortinetRouters, connected, 120.23.54.12
- fortinetRouters
- Building#8
- 120.23.54.14
Diningroom, Building#8, connected

fortynet

Fortinet 1
fortinetRouters
connected
120.23.54.9

Fortinet 2
fortinetRouters
connected
120.23.54.10

Fortinet 3
fortinetRouters
connected
120.23.54.11

Office 101
fortinetRouters
connected
120.23.54.12

Building#8

Diningroom
Building#8
connected
120.23.54.14

Auditorium
Building#8
connected
120.23.54.15

Lab 203
Building#8
connected
120.23.54.16

Fortinet 1
Building#8
connected
120.23.54.17

History search records are displayed in categories with identifiable icons. Router items are followed with properties.

3. Active search box with incomplete input

The screenshot shows a Fortinet management interface with a search box containing the text 'for'. The search results are displayed in a list and a grid below. The list results are:

- Fortinet 1**
fortinetRouters, connected, 120.23.54.9
- Fortinet 2**
fortinetRouters, connected, 120.23.54.10
- Fortinet 1**
Building#8, connected, 120.23.54.17
- Office 101**
fortinetRouters, connected, 120.23.54.12
- fortinetRouters**

The search box now contains the text 'fortynet', and the results are displayed in a grid:

- Fortinet 1**
fortinetRouters, connected, 120.23.54.9
- Fortinet 2**
fortinetRouters, connected, 120.23.54.10
- Fortinet 3**
fortinetRouters, connected, 120.23.54.11
- Office 101**
fortinetRouters, connected, 120.23.54.12

Below this, a section titled 'Building#8' contains:

- Diningroom**
Building#8, connected, 120.23.54.14
- Auditorium**
Building#8, connected, 120.23.54.15
- Lab 203**
Building#8, connected, 120.23.54.16
- Fortinet 1**
Building#8, connected, 120.23.54.17

Provide predictions and indicate the prediction parts with bold character.

4. Active search box with complete input

The screenshot shows a network management interface with a search box containing the text "fortinet". Below the search box, a list of search results is displayed. The results are as follows:

- Fortinet 1**
fortinetRouters, connected, 120.23.54.9
- Fortinet 2**
fortinetRouters, connected, 120.23.54.10
- Fortinet 1**
Building#8, connected, 120.23.54.17
- Office 101**
fortinetRouters, connected, 120.23.54.12
- Hallway**
fortinetRouters, connected, 120.23.54.13

Below the search results, there are several device cards. The cards are:

- Fortinet 1**
fortinetRouters connected
120.23.54.9
- Fortinet 2**
fortinetRouters connected
120.23.54.10
- Fortinet 3**
fortinetRouters connected
120.23.54.11
- Office 101**
fortinetRouters connected
120.23.54.12

Below these cards, there is a section for **Building#8** containing four sub-cards:

- Diningroom**
Building#8 connected
120.23.54.14
- Auditorium**
Building#8 connected
120.23.54.15
- Lab 203**
Building#8 connected
120.23.54.16
- Fortinet 1**
Building#8 connected
120.23.54.17

Indicate the complete keyword in the list with bold.

5. Search result

The screenshot shows the Fortinet management console interface. On the left is a sidebar with the Fortinet logo and navigation icons. The main area features a search bar containing 'fortinet' and a filter menu with options: All (selected), Name, Group Name, IP, and Status. Below the search bar, results are categorized into 'Routers' and 'Groups'. The 'Routers' category contains six items: Fortinet 1 (IP 120.23.54.9), Fortinet 2 (IP 120.23.54.10), Fortinet 3 (IP 120.23.54.11), Fortinet 1 (IP 120.23.54.17), Office 101 (IP 120.23.54.12), and Hallway (IP 120.23.54.13). The 'Groups' category contains one group named 'fortinetRouters' which includes four items: Fortinet 1 (IP 120.23.54.9), Fortinet 2 (IP 120.23.54.10), Fortinet 3 (IP 120.23.54.11), and Office 101 (IP 120.23.54.12). Each item displays a router icon, the name, the group name 'fortinetRouters', a 'connected' status with a green arrow, and the IP address.

| Display the results in categories: Routers, Groups.

6. Fuzzy input

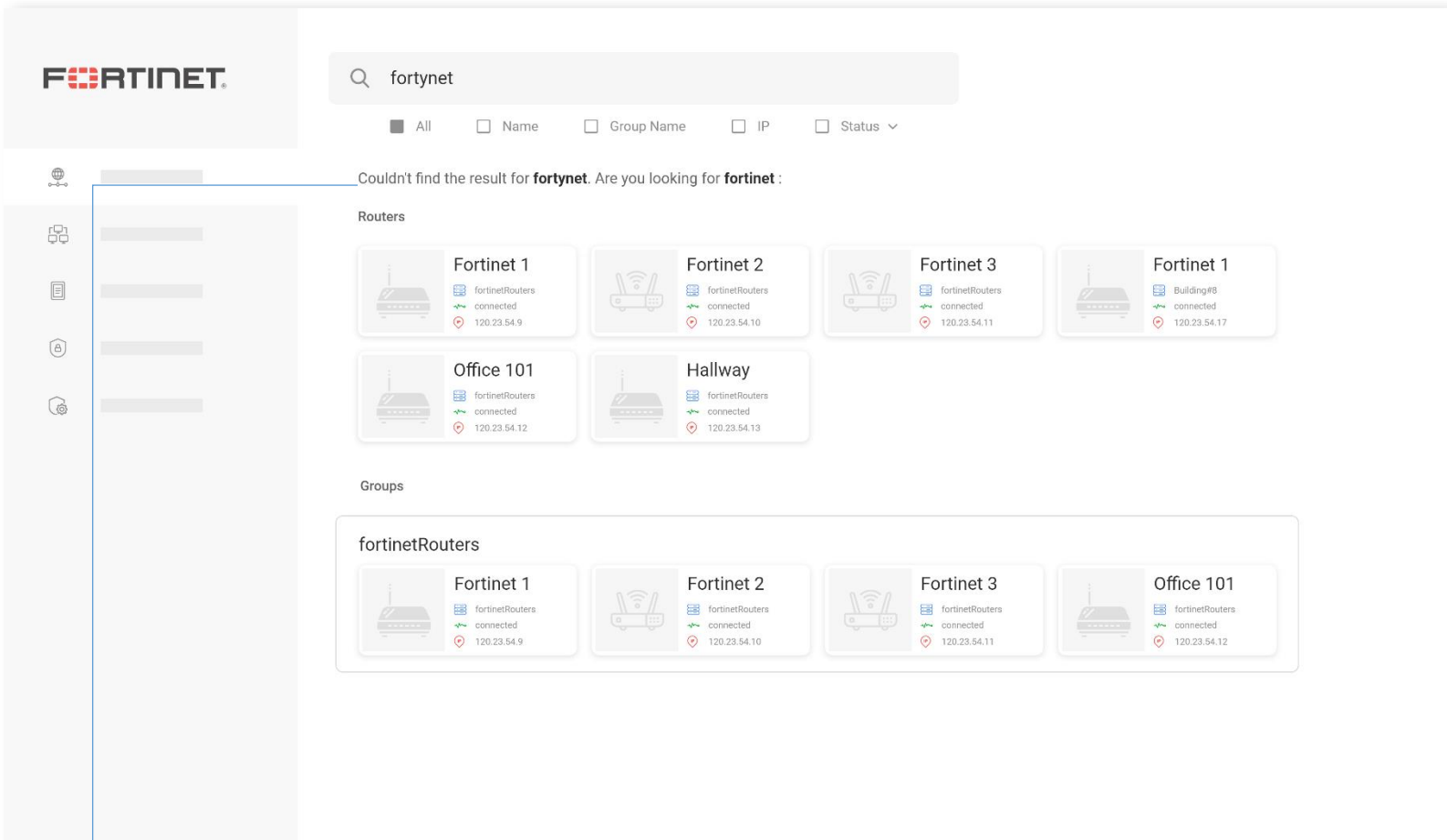
The screenshot shows a network management interface with a search bar containing the text 'fortynet'. A dropdown menu displays the following suggestions:

- Fortinet 1**
fortinetRouters, connected, 120.23.54.9
- Fortinet 2**
fortinetRouters, connected, 120.23.54.10
- Fortinet 1**
Building#8, connected, 120.23.54.17
- Office 101**
fortinetRouters, connected, 120.23.54.12
- Hallway**
fortinetRouters, connected, 120.23.54.13
- fortinetRouters**

The background interface shows a network map with several nodes, including Fortinet 1, Fortinet 2, Fortinet 3, Office 101, and Building#8. Each node is represented by a router icon and includes details such as the device name, connection status, and IP address.

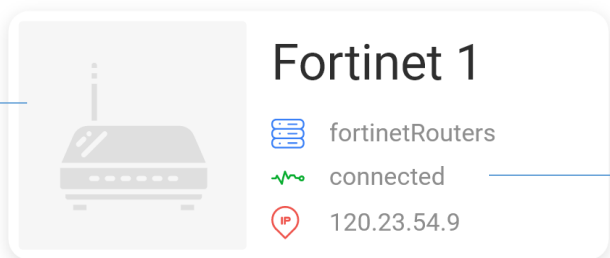
| Display the closest keyword suggestions.

7. Fuzzy input search result



Indicate that couldn't find the result and provide the suggestion results at the same time.

8. Router card



Preview basic properties on the card

This is router logo placeholder. Assume that routers with different brands or model numbers have their own distinguished logos, if we display the logo on the card, it will help users quickly identify the router they are looking for.

9. Specs

Typography

Title1 Roboto Regular 24pt **Bold 24pt**

Subtitle Roboto Regular 20pt **Bold 20pt**

Title2 Roboto Regular 18pt **Bold 18pt**

Content Roboto Regular 12pt

Color



#FFFFFF #F6F6F6 #DFDFDF #646464 #2E2E2E




#EF564E #07AC2E #387FF7

Icon









Components



Fortinet 1
fortinetRouters
connected
120.23.54.9

Search

All Name Group Name IP Status ▾

Search	
 Fortinet 1 fortinetRouters, connected, 120.23.54.9	×
 Office 101 fortinetRouters, connected, 120.23.54.12	×
 fortinetRouters	×
 Building#8	×
 120.23.54.14 Diningroom, Building#8, connected	×
 fortynet	×