Ruijie Automatic Terminal Recognition Technology

White Paper
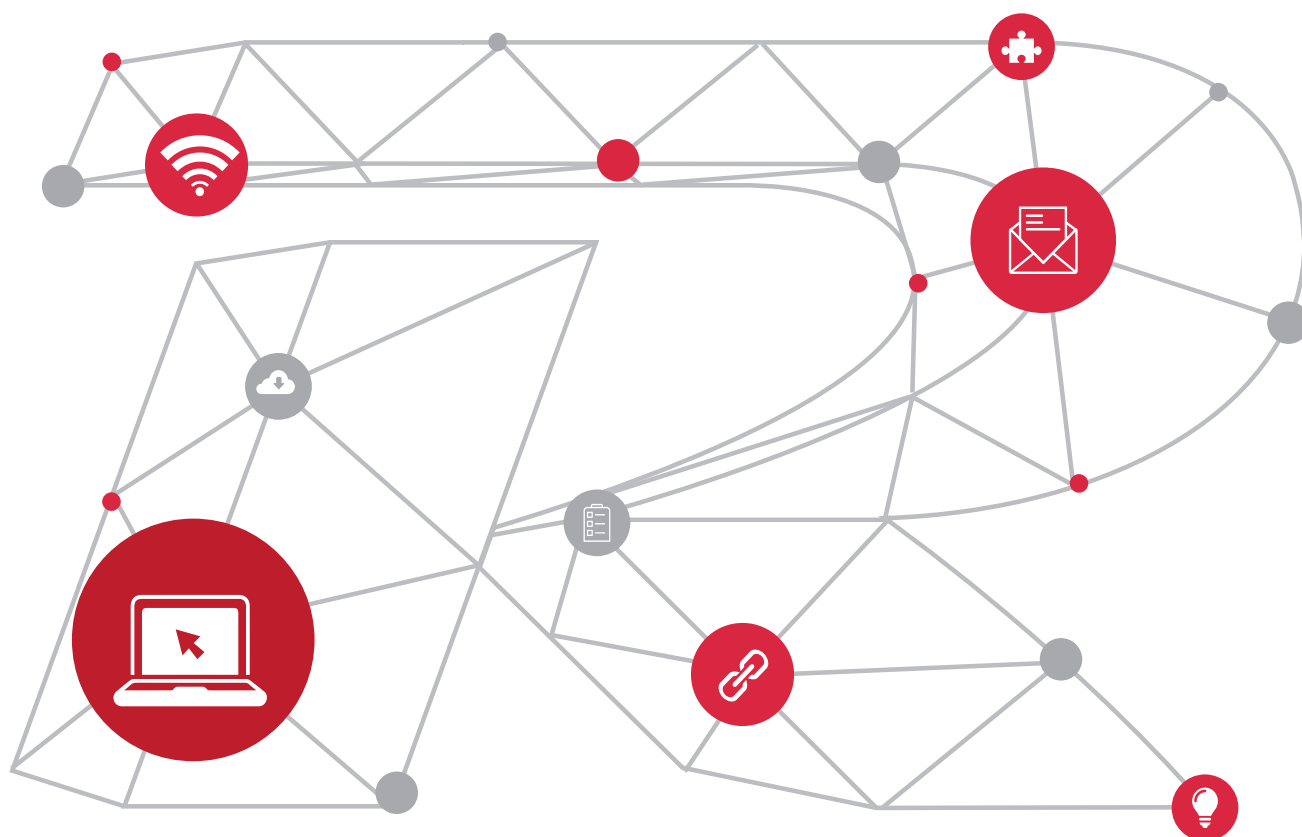
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Introduction

This document describes Ruijie automatic terminal recognition technology.

With increasingly mature radio technologies, mobile networks are developing, and various mobile terminals and tablet devices are introduced in the mobile networks.

It is roughly estimated that 420 million smart phones are sold in 2011.

The generation of various terminals posts both new opportunities and challenges to the network access services. One of the challenges is that impressive experience with different terminals is expected.

The embedded portal technology involves users' experience with authentication page and authentication service. The following problems are concerned.

Page information should be normally displayed on terminals of different sizes.

Different types of terminals should be customizable, so as to improve user experience (this service is unavailable temporarily).

Different network policies should be applied to audio terminals, video terminals, and data download terminals (this service is unavailable temporarily).

The prerequisite for solving these problems is the ability to recognize the terminals.

The above is the basic background for the automatic terminal recognition technology.

Basics

• UA field in HTTP

The UA field is a field in the HTTP packet header.

The UA field includes information about the user agent that initiates a request, generally including browser version information and compatibility information. It can be used to perform a network audit, trace protocol violations, and identify a user agent, so as to automatically customize responses for the specific user agent.

Generally, UA information corresponds to a browser program. Each browser program includes a fixed UA field (for desktop browsers such as Firefox and Chrome, this field can be modified), and the UA information varies with the browser program.
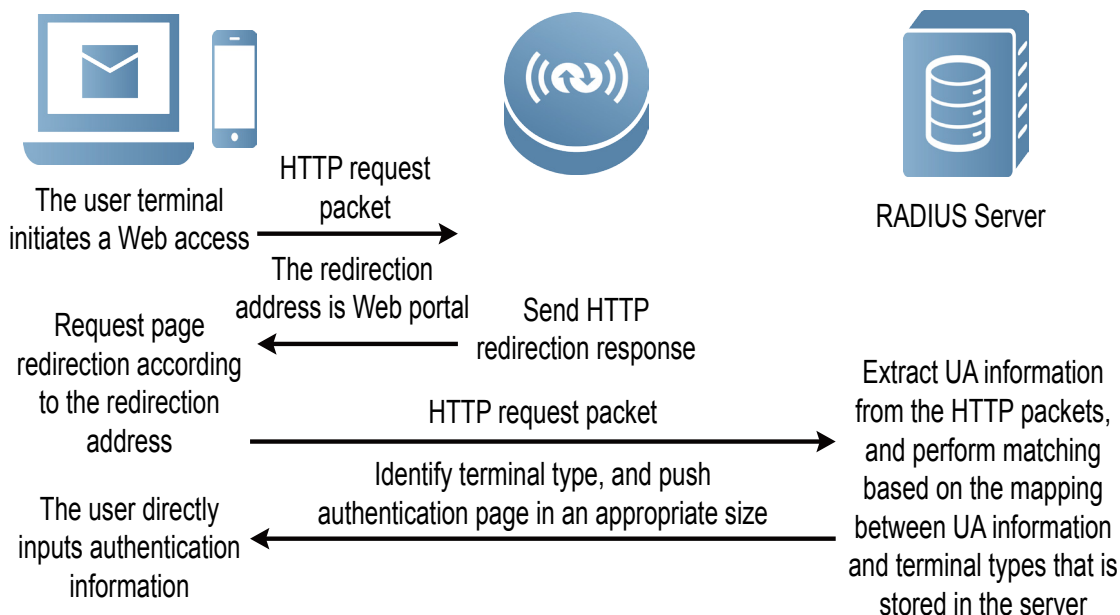
The format of the UA field is not defined in any standard, but the browser developers use relatively fixed text to describe it, and the UA information of various browsers can be easily found on the Internet (a reference website: http://www.zytrax.com/tech/web/mobile_ids.html).

Technical Principle

A device can quickly identify the terminal type by extracting the UA information from the request packets used by a user to access a web page and matching the UA information with the mapping relationship between UA information and terminals that is embedded in the device.

With Ruijie embedded portal authentication, when an authentication is initiated, the device needs to parse the user request packets. Therefore, the authentication is realized by parsing out the UA information and performing a matching operation. Because no extra interaction is required, users cannot perceive the process.

Figure 1

The user terminal initiates a Web access

HTTP request packet

Request page redirection according to the redirection address

The redirection address is Web portal

Send HTTP redirection response

RADIUS Server

HTTP request packet

Extract UA information from the HTTP packets, and perform matching based on the mapping between UA information and terminal types that is stored in the server

The user directly inputs authentication information

Identify terminal type, and push authentication page in an appropriate size

Because browser versions are updated frequently, it is recommended not to use version numbers as the mapping keys. Instead, Ruijie preferentially selects system-related fields as the mapping keys.

In addition, many types of browsers are used, and new browser programs emerge one after another. To meet this challenge, the mapping relationship stored in Ruijie devices is highly maintainable and scalable.

Typical Application

Currently, the automatic recognition technology is used to select authentication pages of different sizes for push. With the automatic recognition technology, different types of terminals (mobile phones or computers) are recognized, and then pages of different sizes are selected and presented. This ensures that pages are displayed on terminals in proper sizes.

Limitations

Because of the unique UA field information in the HTTP packet, when a new type of browser emerges, the mapping table between the UA information and terminals should be updated

During implementation of the automatic terminal recognition technology, some uncommon browsers and new browsers are not taken into consideration. Therefore, before deploying such browsers, you are advised to do some research and solve the problem by using the provided extension approach.

Conclusion

Ruijie automatic terminal recognition technology saves smart terminal users the effort of adjusting pages during web authentication, thereby delivering impressive experience to users of different terminals.

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