HEAVEN'S DOOR RA

OUTLINE

Heaven's Door RA (HDRA) allows the activation and deactivation of remote access to a device through the internet using Latch.

HDRA performs a Port Forwarding on the router that provides internet access to the device. It consists of two modules: a configuration module for the router with the data for the management (brand, model, IP address, username and password) and remote access data (device IP address, TCP port and MAC Address to activate "WakeOnLan"). The other module works as a service that queries the state of operations in Latch and interacts with the router.

STRUCTURE

The HDRA structure can be modified according to the user's preferences (this requires a change in the configuration file).

```
├──── app                 Application Core
│     ├──── classes       General Classes
│     ├──── latch         Latch SDK PHP
│     └──── routers       Router Classes
├──── bootstrap           Bootstrap and jQuery files
│     ├──── css
│     ├──── fonts
│     └──── js
├──── config              Configuration File
│                         (THIS LOCATION IS NOT RECOMMENDED)
├──── img                 Images
├──── templates           Templates
├─ index.php              Index Page
├─ monitor.php            Status Monitor
└─ service.php            Service PHP Script
```
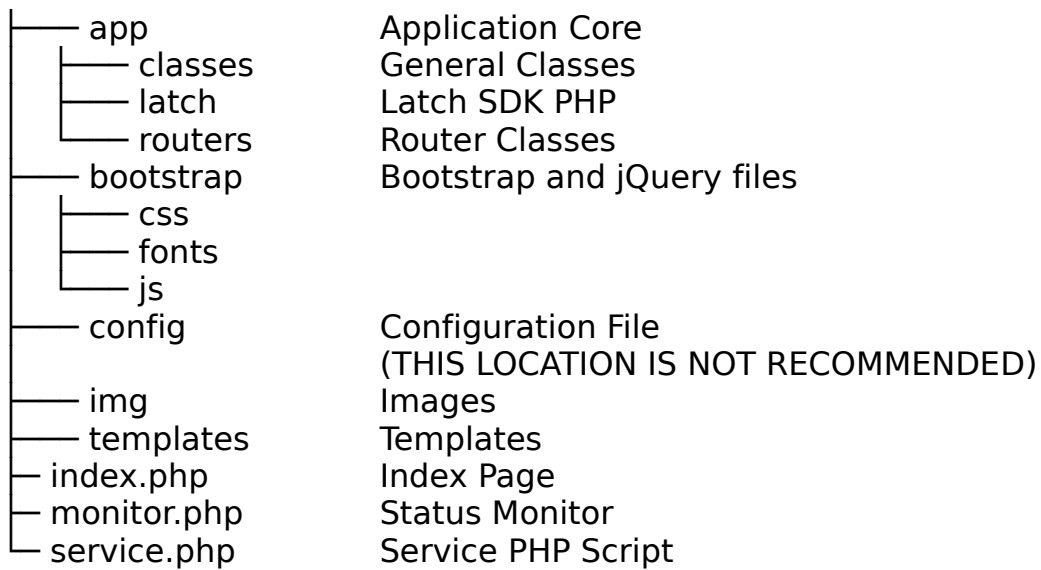
The config and templates folders are blocked for access through the browser. It is advisable to locate the config folder outside the web server's access.

REQUIREMENTS

- **PHP 5.3** or higher

- PHP Extensions: **cURL** and **mcrypt**

- **Apache 2.4.10** or higher

- It is necessary to create an application in **Latch**, obtaining two values: **"Application ID"** and **"Secret"** that will allow linking HDRA and Latch. To do this you must register as a developer by entering the "Developer Area" option on the Latch website (https://latch.elevenpaths.com) and create an application with four (4) operations (Unpair, HDRA Configuration, Remote Access and Remote Router Configuration).

- PHP class that allows HDRA to interact with your router. At the moment it is available for the TP-LINK TD-W8950ND router and I am developing a class to access MikroTik's RouterOS. If your router allows web access it is possible that you can take this class and make the necessary changes (URLs) to make it work. In the next section we will look at some specifications about the definition of this class.

- You will need to install the Latch application on your mobile device (https://latch.elevenpaths.com/www/download.html).

ROUTER CLASS

Some points to consider for the development of the router class:

- The name of the class must respect the format: class.ROUTER-NAME_MODEL.php (It is necessary that this format is respected since otherwise the class will not be recognized).

- The router class inherits from the abstract class "AbstractRouter"
- (class.abstract.router.php) that defines the abstract methods necessary for the class to work with HDRA.

- You should save the class in app\routers\.

- The code example:

```php
<?php

require_once ROUTERS_PATH.'class.abstract.router.php';

class Router extends AbstractRouter {

        function __construct($router_ip, $user, $pass) {
                parent::__construct($router_ip, $user, $pass);
        }

        public function login() {
                /* ROUTER LOGIN */

                /* RETURN: LOGIN OK = 1 - LOGIN ERROR = 0 */
        }

        public function router_configuration($active = false) {
                /* ENABLE / DISABLE ($active) ACCESS
                TO ROUTER CONFIGURATION VIA INTERNET */

                /* RETURN: OK = 1 - ERROR = 0 - NOTHING TO DO = 3 */
        }

        public function remote_access($active = false, $remote_ip, $port) {
                /* ENABLE / DISABLE ($active) REMOTE ACCESS
                (Port Forwarding) TO LOCAL IP AND PORT
                ($remote_ip y $port) VIA INTERNET */

                /* RETURN: OK = 1 - ERROR = 0 - NOTHING TO DO = 3 */
        }
}

?>
```

INSTALATION

- **Step 1:** Create an application in Latch registering as a developer. For this you must enter the "Developer Area" option on the Latch website (https://latch.elevenpaths.com).
  The application must contain four (4) operations: Unpair, HDRA Configuration, Remote Access and Remote Router Configuration.

- **Step 2:** Download HDRA from https://github.com/matiast-gh/heavens-door-ra

- **Step 3:** Configure the application parameters by editing the file in hdra/app/config.php:

  define("TITLE_APP", "Heaven's Door RA");
  Application name: No change is required.

  define("TEMPLATE_PATH", "templates /");
  Template Location: No change is required.

  define("CONFIG_PATH", "config / config.xml");
  Location of the configuration file: It is advisable to configure the location of the file outside the public access folder of the web server.
  You do not need to create the config.xml file, as it will be created when you save your settings. The folder that stores it must have the appropriate permissions so that from PHP it can be written to it.

  define("CFG_SECRET", "");
  This text string will be used to encrypt the passwords in the config.xml configuration.

  define("ROUTERS_PATH", "app/routers/");
  Location of the "Router" classes: No change is necessary.

  define("LATCH_APP", "");
  Application ID obtained when creating the application in Latch.

  define("LATCH_SECRET," ");
  The Secret obtained when creating the application in Latch.

  define("LATCH_OPERATIONS_CFG", "");
  ID of the operation called HDRA Configuration

  define("LATCH_OPERATIONS_UNPAIR", "");
  ID of the operation named Unpair

  define("LATCH_OPERATIONS_RA", "");
  ID of the operation called Remote Access

  define("LATCH_OPERATIONS_RC", "");
  ID of the operation called Remote Router Configuration

define("LATCH_OPERATIONS",serialize(array(LATCH_OPERATIONS_CFG => "HDRA Configuration ", LATCH_OPERATIONS_RA =>" Remote Access ", LATCH_OPERATIONS_RC => "Remote Router Configuration", LATCH_OPERATIONS_UNPAIR => "Unpair")));
Web application operations: No change is required.

define("LATCH_OPERATIONS_SERVICE", serialize (array (LATCH_OPERATIONS_RA, LATCH_OPERATIONS_RC)));
HDRA Service Operations: No change is required.

define('HD_EXP_IP', '/^(?:(?:25[0-5]|2[0-4][0-9]|[01]?[0-9][0-9]?)\.){3}(?:25[0-5]|2[0-4][0-9]|[01]?[0-9][0-9]?)$/');
Regular expression for validation of IP addresses.
No change is required.

define('HD_EXP_PORT', '/ ^ [0-9 \ d] {1,5} / i');
Regular expression for port validation.
No change is required.

define('HD_EXP_MAC', '/ ^ ([a-fA-F0-9] {2}) {5} [a-fA-F0-9] {2} /');
Regular expression for validation of MAC Address.
No change is required.

define('HD_EXP_ARP_MAC', '/ ([a-fA-F0-9] {2} [: -]) {5} [a-fA-F0-9] {2} /');
Regular expression used to obtain the MAC Address from the IP Local.
No change is required.

define('WOL_COMMAND', 'wakeonlan {mac}');
Command to execute to perform the Wake on Lan process.
You must install a third-party program to enable this option:
Windows: http://www.nirsoft.net/utils/wake_on_lan.html
Linux: sudo apt-get install wakeonlan

define('ARP_COMMAND', 'arp -a {ip}');
Command used to obtain the MAC Address from the IP Local.
No change is required.

- **Step 4:** Transfer the contents of the /hdra folder to the web server folder, within the local network, from where HDRA will perform access control.

- **Step 5:** Configure the execution of the HDRA service script on the server within the local network, which will check the status of Latch operations.

  1. Copy the file hdra.service.sh located inside the /script folder to the location you want inside the server.
  2. Define the file as executable: chmod + x hdra.service.sh
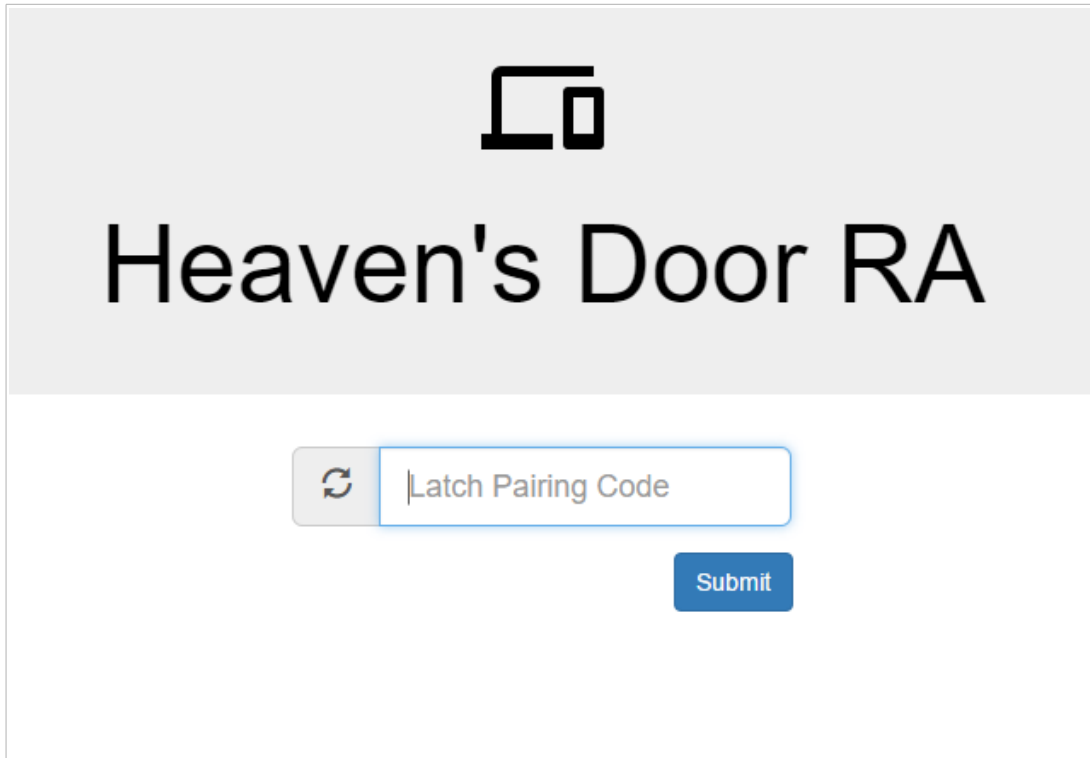 3. Check the operation: ./hdra.service.sh
  4. Schedule execution at start: crontab -e and within the file add the following line @reboot. /home/[username]/hdra/hdra.service.sh

  NOTE: These steps were tested on the Jessie Raspbian distribution. Other distributions may not work in the same way.

- **Step 6:** Install the Latch application on your mobile device (https://latch.elevenpaths.com/www/download.html).

- **Step 7:** The End... We are ready to pair HDRA with Latch and configure HDRA to start using it.

CONFIGURATION

- **Step 1:** Pair HDRA with Latch entering the address where the content of the /hdra folder was located.

To pair HDRA with Latch you must enter the Latch app on your mobile device and select the option "Add new service" and then "Pair with Latch". Now select the "Generate new code" option and enter the value presented in the "Latch Pairing Code" field on the HDRA page. If the process completes successfully you will be redirected to the HDRA configuration page.

NOTE: It is necessary to silence the application on your mobile device because when the HDRA service checks the status of a blocked operation you will be permanently present on the device with a message that someone has attempted to access a blocked operation.

- **Step 2:** HDRA Settings

The "Status Monitor" panel indicates the status of operations and allows you to unpoir HDRA from Latch.

The "HDRA Configuration" panel allows you to configure the HDRA parameters:
- ◆ **Router.** All routers available in HDRA will be displayed in the drop-down menu (this list is generated based on the available classes).
- ◆ **Router IP Address:** IP address of the router.
- ◆ **Router Username:** username for the connection to the router.
- ◆ **Router Password:** password for connection to the router.
- ◆ **Local IP.** IP address of the local computer to which you connect remotely.
- ◆ **Local Port:** The port of the remote computer that you will use to connect to the local computer (the protocol definition of the port [TCP - UDP - TCP / UDP] must be done from the router class since it is not yet implemented in the HDRA configuration).
- ◆ **MAC Address:** The MAC Address for to perform the Wake On Lan process. If it is not entered it is considered that this function is disabled.

NOTE: After entering the router, the IP address of the router, the username and the password you can check the connectivity to the router using the "Test Login" button. In the same way, when entering the IP address of the local computer you can obtain the MAC Address by pressing the button "Get MAC from Local IP".

OPERATION

From the Latch application on your mobile device you can activate / deactivate the following operations:

- **Unpair:** You can enable / disable the unpair option on the HDRA configuration page.

- **HDRA Configuration:** You can enable / disable access to HDRA settings.

- **Remote Access:** you can enable / disable remote access to the specified computer through the port you have set.

- **Remote Router Configuration:** You can enable / disable remote access to the router configuration.

You can see a demo of HDRA at the following link:

https://youtu.be/4JfM06t5p8k

WE'RE DONE
BEGINS TO USE LATCH AND HDRA
:)

Questions and suggestions will be very well received in
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Bob Dylan - Knockin' On Heaven's Door
https://www.youtube.com/watch?v=cJpB_AEZf6U