

rFactor Hotlaps Guide v2

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Main Features

- Recording and presentation of fastest laps by track and Mod.
- Recording and presentation of all race results.
- League scoring using a configurable schedule and points system.
- Live “ticker” showing current activity on an rFactor dedicated server.
- Live scoring page showing current activity on an rFactor dedicated server and automatic load balancing of a live video feed (optional).
- Recording of all chat occurring on an rFactor dedicated server.

Installation

rFactor Hotlaps must be installed inside an existing rFactor installation on a dedicated server. The default directory is *C:\Program Files\rFactor\rFactorHotlaps*. The main program is installed as a Windows Service and shortcuts to start and stop the service are included on the Start Menu.

If you wish to use multiple instances of rFactor Hotlaps for multiple dedicated servers running on the same physical server some special configuration is required. Read the “Advanced Topics” section below. **Do not use the rFactor Hotlaps installation for this!**

Some configuration will be required for rFactor Hotlaps after a fresh installation. Read the following sections carefully for details on how to configure rFactor Hotlaps correctly.

General Configuration

All rFactor Hotlaps configuration is done from a common configuration file. This file should be opened and edited using a text editor like Notepad. The path to this configuration file is *%rFactorHOME%\rFactorHotlaps\config\rFactorHotlaps.properties*.



When anything is changed in the rFactorHotlaps.properties file, the rFactor Hotlaps service must be restarted using the shortcuts provided on the Start menu.

The following general properties are available in the configuration file:

Property	Description
http_port	rFactor Hotlaps generates all results as web pages. This parameter specifies the port number that should be used. The default port a web browser will use is 80. It is recommended you use port 80 but some game servers will not allow port 80 to be used. For these servers another port must be used. Example: http://gs8.mtco.com/rFactorHotlaps ← Using port 80. http://gs8.mtco.com:27012/rFactorHotlaps ← Using port 27012.
ipc_port	This is the port rFactor Hotlaps will use to communicate with the rFactor Hotlaps plugin installed on the dedicated server. This must match the port specified in the <i>HotLapsPlugin.ini</i> file on the same server. See the “Advanced Topics” section for more details on this.
max_hotlaps	Specifies the maximum number of laps to record for a track. A value of 250 will record the 250 fastest lap times for each track the dedicated server runs.
include	A semi-colon separated list of player names you want to include in Hotlap recording. A wildcard “*” is allowed. For example, PTR* will record laps for all players that have a name beginning with “PTR”. A single “*” character will record laps for all players.
exclude	A semi-colon separated list of player names you want to exclude from Hotlap recording. A wildcard “*” is allowed. For example, setting this parameter to PTRKennyVette will cause Hotlaps to ignore all laps run by this player.
ipaccesslist	A semi-colon separated list of IP numbers you want the Hotlaps application to accept. This applies to web requests only. A wildcard “*” is allowed. Normally this parameter will always be set to “*” which provides access to all. If you want to limit access to another server or small group of users, you can use this parameter to restrict access.
ipblocklist	A semi-colon separated list of IP numbers you want the Hotlaps application to ignore. This applies to web requests only. A wildcard “*” is allowed. Normally you would specify web crawler IP numbers in this list. The recommended list of IP numbers to block is: 193.252.149.15;193.47.80.43;195.210.57.83;202.160.180.111;208.111.154.*; 208.36.144.6;64.1.215.166;66.235.124.*;66.249.*;67.195.37.*;67.228.207.202; 69.58.178.*;72.30.*;74.6.*
server_name	The name of your dedicated server. The value specified here will be displayed on the Ticker and the web pages generated by rFactor Hotlaps.
trail_message	A message and HTML code that should be rendered at the end of the scrolling Ticker.
results_dir	This specifies the location rFactor Hotlaps should store race results and chat log files. You only need to change this directory if you want the results and chat logs to be stored some place else. Default value is <i>./results</i>
liveurl1 – liveurln	A list of live streaming video feeds to be used by the rFactorLive page generated by rFactor Hotlaps. More on this later in this document. This is an advanced feature.
incident_sensitivity immovable_incident_sensitivity incident_duration	These three parameters help tune the LPI (laps per incident) calculation. Incident_sensitivity is a value between 0.0 and 1.0. It defines how significant the contact between two cars must be before an incident is charged. Similarly, immovable_incident_sensitivity is used for contact with an immovable object

	like the wall. Incident_duration is a time in seconds where additional incidents will not be charged following a chargeable incident. For example, if a driver hits the wall multiple times within 10 seconds, and this parameter is set to 10.0, then only one incident will be charged.
lpi_num_races	The number of recent past races to use in calculating LPI (laps per incident) for a driver.
league_schedule1 – league_scheduled	A list of schedules for league events. Multiple schedules can be specified. More on this later in this document under “League Scoring”.
points*	Points system that rFactor Hotlaps will use to score league races. More on this later in this document under “League Scoring”.

Hotlaps Recording

The Hotlaps results page is accessed using the following URL:

http://<yourserver>:<http_port>/rFactorHotlaps

There are five filter parameters that can be used to filter the data returned; “category”, “track”, “driver”, “session” and “max”. The category, track, driver and session parameters will filter the results to a single mod, track, driver and session accordingly. The max parameter will specify the number of Hotlaps to return for each track. If max is not specified a value of 10 is used (the top 10).

Filter parameters are specified by including a “?” character after “rFactorHotlaps” followed by a name=value syntax. Multiple parameters can be separated with an “&” symbol. Valid filters include: “track” and “max”.

Examples:

<http://74.52.31.250:27012/rFactorHotlaps?max=100>

<http://74.52.31.250:27012/rFactorHotlaps?max=100&track=lowa%20Speedway>

Note: Spaces and other special characters must be escaped using % notation.

rFactorHotlaps Web Page Customization

The rFactorHotlaps web page is a dynamic page that can be customized any way you wish. The page is generated from the *rFactorHotlaps.htm* file located in the *%rFactorHOME%\rFactorHotlaps\web* directory on the dedicated server. When changing files in this directory there is no need to restart the rFactor Hotlaps service.

The *rFactorHotlaps.htm* page is a simple web page that includes one special comment. The comment “<!--@TABLE-->” will be replaced with a HTML table containing the Hotlaps results.

Some CSS styles can be used to customize the appearance of the generated text:

<i>div.hotlaps div.server</i>	– Style for the rendered Server name.
<i>div.hotlaps caption.track</i>	– Style for the rendered Track name.
<i>div.hotlaps tr.header</i>	– Style for the table header row.
<i>div.hotlaps tr.detaileven</i>	– Style for even numbered results rows.
<i>div.hotlaps tr.detailodd</i>	– Style for odd numbered results rows.

Live Ticker

The live ticker is accessed using the following URL:

http://<yourserver>:<http_port>/rFactorHotlaps/Marquee.htm

It is recommended that you embed this URL inside another web page using an `<iframe>` element. For example:

```
<iframe src="http://<yourserver>:<http_port>/rFactorHotlaps/Marquee.htm"
name="standings" width="1180" height="25" scrolling="No" id="standings"
frameborder="0"></iframe>
```

Live Ticker Customization

The live ticker is generated from the *Marquee.htm* file located in the `%rFactorHOME%\rFactorHotlaps\web` directory on the dedicated server. When changing files in this directory there is no need to restart the rFactor Hotlaps service.

Javascript parameters inside the *Marquee.htm* file can be used to change the behavior of the ticker.

<i>marqueespeed</i>	– Controls the speed the ticker scrolls across the web page.
<i>marqueebgcolor</i>	– Sets the background color of the ticker.
<i>pauseit</i>	– If set to 1 the ticker will pause when the mouse pointer is over it.

CSS styles inside the *Marquee.htm* file can be used to customize the appearance of the generated text:

<i>div.marqueestandings span.position</i>	– Style for position text.
<i>div.marqueestandings span.number</i>	– Style for car numbers.
<i>div.marqueestandings span.name</i>	– Style for driver names.
<i>div.marqueestandings span.time</i>	– Style for lap times.
<i>div.marqueestandings span.track</i>	– Style for track and session text.
<i>div.marqueestandings span.trailmsg</i>	– Style for trailing message.

Race Results

The race results page is accessed using the following URL:

http://<yourserver>:<http_port>/rFactorResults

This page will display the results of every race that has been run on the dedicated server in a collapsible table. The race results data files are stored in the directory specified by the *results_dir* parameter of the *rFactorHotlaps.properties* file. The default path is *%rFactorHOME%\rFactorHotlaps\results*. If you wish to cleanup old race results you can simply delete files from this directory and restart the Hotlaps service using the shortcuts provided on the Start menu.



When race results files are removed or changed, the League scoring will also change. You must restart the Hotlaps service whenever you change the race results files.

Included in the race results details are every incident that occurred on the track between vehicles. This report does not attempt to place blame for the incident or show the severity of the incident. The incidents reported will be any contact between vehicles no matter how minor.

One filter can be used with the rFactorResults URL. If included the “startdate” filter will return only races beginning with the specified date. The date format must be yyyy-mm-dd. For example:
<http://gs8.mtco.com:27012/rFactorResults?fromdate=2008-12-01>

rFactorResults Web Page Customization

The rFactorResults web page is a dynamic page that can be customized any way you wish. The page is generated from the *rFactorResults.htm* file located in the *%rFactorHOME%\rFactorHotlaps\web* directory on the dedicated server. When changing files in this directory there is no need to restart the rFactor Hotlaps service.

The *rFactorResults.htm* page is a simple web page that includes one special comment. The comment “<!--@TABLE-->” will be replaced with a HTML table containing the race results.

Some CSS styles can be used to customize the appearance of the generated text:

div.results tr.raceheader – Style for the race summary line.
div.results tr.collapsible – Style for the collapsible race results line.

- div.results tr.detailheader* – Style for the detail results header row.
- div.results tr.detaileven* – Style for even numbered results rows.
- div.results tr.detailodd* – Style for odd numbered results rows.
- div.results tr.racereport* – Style for the race report text within the detail rows.

League Scoring

League scoring is configured using the league schedule and points parameters in the *rFactorHotlaps.properties* file.

League Schedule

Individual races are assigned to a “League” if the time the race is run falls within the time period defined for a League race. If the race does not fall within the time period of any defined league then the race is assigned to the “Open” league. Points scored during a race are counted in the overall league score of the league scheduled for the time period.

Multiple league schedules can be specified in the *rFactorHotlaps.properties* file using the “league_schedule” parameters. Multiple schedules must be numbered sequentially, i.e. “league_schedule1”, “league_schedule2”, etc. A single league schedule must be defined by specifying a list of parameters separated by commas. The parameters must be specified in the following order:

Order	Parameter	Description
1	League Name	The name of the league as you would like to see it on the rFactorLeagues scoring page. This can be anything you like.
2	Period	This can be one of the following: <ul style="list-style-type: none">• Once – A one time event that occurs on the date specified in the 3rd parameter and between the times specified in the 4th and 5th parameters.• Daily – An event that occurs every day between the times specified in the 4th and 5th parameters.• Weekly – An event that occurs weekly on the day of the week specified in the 3rd parameter and between the times specified in the 4th and 5th parameters.• Monthly – An event that occurs monthly on the day of the month specified in the 3rd parameter and between the times specified in the 4th and 5th parameters.
3	Date / Day / Day of Week	This parameter has different meanings depending on the schedule type specified in the 2 nd parameter. The list below indicates what to use here for the different schedule periods specified in the 2 nd parameter: <ul style="list-style-type: none">• Once – Must be a date in the form dd-MMM-yyyy. For example 01-Jan-2008.• Daily – Undefined. Leave blank.• Weekly – Must specify a day of the week from “Sunday” to “Saturday”.• Monthly – Must specify a day of the month from 1 to 31.
4	Start Time	The starting time this league schedule is valid. Use 24 hour time format.
5	End Time	The ending time this league schedule is valid. Use 24 hour time format.
The following two parameters are used for contingency points scoring and can repeat any number of times.		

Order	Parameter	Description
6	Number of Cars	If the number of cars in the race is less than or equal to this value then the following contingency points will be used for any driver that misses a league race.
7	Contingency Points	Contingency points to be assigned to any driver that misses a league race. This value has multiple meanings: <ul style="list-style-type: none"> • 0 – No contingency points will be awarded for a missed race. • < 0 – Contingency points will be awarded calculated from last place position less this value of the cars that ran the race. • > 0 – The specified fixed number of contingency points will be awarded to any driver who missed a race.

Some examples:

league_schedule1=Single Event, Once, 10-Oct-2007, 2200, 2300, 10, -10, 20, -7, 30, -5, 50, -1

- This league occurs only once on 10-Oct-2007 between 10:00pm and 11:00pm. If there are 10 cars or less in the race any driver who missed the race, and has run another race in the league, will be awarded points for last place - 10 positions. If there were between 10 and 20 cars in the race contingency points is last place - 7 positions. If there were more than 30 cars in the race contingency points is last place - 5 positions. Etc.

league_schedule2=Daily League, Daily, , 2200, 2300, 10, -10, 20, -7, 30, -5, 50, -1

- This league occurs every day between 10:00pm and 11:00pm with the same contingency points defined in schedule 1 above.

league_schedule3=Weekly Tuesday League, Weekly, Tuesday, 2200, 2300, 10, -10, 20, -7, 30, -5, 50, -1

- This league occurs every week on Tuesday evenings between 10:00pm and 11:00pm with the same contingency points defined in schedule 1 above.

league_schedule4=Monthly On 15th, Monthly, 15, 2200, 2300, 10, -10, 20, -7, 30, -5, 50, -1

- This league occurs on the 15th day or every month between 10:00pm and 11:00pm with the same contingency points defined in schedule 1 above.

Points System

Using the *points** parameters in the *rFactorHotlaps.properties* file you can define any custom points system you wish.

When a race completes each driver is assigned points based on the configuration in the properties file. If the race ended during a scheduled league time period the points received will count towards the drivers total league score.

The following parameters are used to configure the points system:

Property	Description
points_lead_lap	The number of points a driver receives for leading a lap during the race.
points_lead_most	The number of points a driver receives for leading the most laps during a race.
points_qualify_default	The number of points all drivers will receive for simply qualifying. Normally this will be 0.

Property	Description
points_qualify_1 - points_qualify_n	The number of points a driver will receive for qualifying in a given position. This parameter must be numbered sequentially starting from 1 (pole) with no limit. i.e. points_qualify_20 = number of points for qualifying in 20 th position.
points_race_default	The minimum number of points all drivers will receive for running a race. Normally this will be 0.
points_race_1 - points_race_n	The number of points a driver will receive for finishing the race in a given position. This parameter must be numbered sequentially starting from 1 (winner) with no limit. i.e. points_race_20 = number of points for finishing in 20 th position.

League Scoring Web Presentation

The League Scoring page is accessed using the following URL:

http://<yourserver>:<http_port>/rFactorLeagues

This page will display the current standings for every league that has been defined in the properties file and has races. The values presented on this page are calculated from the race results files stored on the dedicated server. If corrections must be made the race results files must be edited (see Advanced Topics). The race results data files are stored in the directory specified by the *results_dir* parameter of the *rFactorHotlaps.properties* file. The default path is *%rFactorHOME%\rFactorHotlaps\results*. If you wish to cleanup old race results you can simply delete files from this directory and restart the Hotlaps service using the shortcuts provided on the Start menu.



When race results files are removed or changed, the League scoring will also change. You must restart the Hotlaps service whenever you change the race results files.

The following columns are displayed on the League Scoring page:

Column	Description
Pos	Current points ranking in the League.
Driver	Driver name.
Wins	Number of race wins.
Top 5s	Number of top 5 finishes.
Top 10s	Number of top 10 finishes.
DNFs	Number of DNFs.
DQs	Number of races the driver was DQ'd.
Poles	Number of pole positions the driver won in qualifying.
Avg. Finish	Average finishing position of all races this driver has run.
LPI	Laps between incidents for the League. An incident is any contact with another vehicle or an immovable object. See general configuration.
Overall LPI	Laps between incidents for all races combined regardless of League.
Races	Number of races this driver ran in this League.

Column	Description
Bonus Points	Number of bonus points the driver has earned from leading laps.
Q-Bonus Points	Number of bonus points the driver has earned from qualifying.
Cont. Points	Number of contingency points the driver was awarded from missing races.
Total Points	Total number of points the driver has earned in the League.

One filter can be used with the rFactorLeagues URL. If included the “league” filter will return the standings for the league specified. An optional “sort” parameter can be specified with values of either “lpi” or “rank”. Rank is experimental at this time. Two other parameters can we used to customize how the leagues are scored. The “besttraces” parameter specifies the league should only score each driver’s X number of best races. The “mincars” parameter works with “besttraces” in that it only scores races with the specified minimum number of cars. For example, the following link will score the 4 best races with at least 5 cars participating:

<http://gs8.mtco.com:27012/rFactorLeagues?league=Best%20Of%20Four&besttraces=4&mincars=5>

rFactorLeagues Web Page Customization

The rFactorLeagues web page is a dynamic page that can be customized any way you wish. The page is generated from the *rFactorLeagues.htm* file located in the *%rFactorHOME%\rFactorHotlaps\web* directory on the dedicated server. When changing files in this directory there is no need to restart the rFactor Hotlaps service.

The *rFactorLeagues.htm* page is a simple web page that includes one special comment. The comment “<!--@TABLE-->” will be replaced with a HTML table containing the league standings.

Some CSS styles can be used to customize the appearance of the generated text:

- div.leagues div.server* – Style for the rendered Server name.
- div.leagues caption.track* – Style for the rendered Track name.
- div.leagues tr.header* – Style for the table header row.
- div.leagues tr.detaileven* – Style for even numbered results rows.
- div.leagues tr.detailodd* – Style for odd numbered results rows.

rFactor “Live” Web Page Generation

The rFactor Live page is accessed using the following URL:

http://<yourserver>:<http_port>/rFactorLive

This page will display the current live status or scoring of the dedicated server. The page uses AJAX to dynamically update itself without reloading. It also has the ability to insert a URL for a live video feed on the generated web page. The URL can be selected from a list to help load balance the video feed. Providing the video feed publishing points is outside the scope of this document.

rFactorLive Web Page Customization

The rFactorLive web page is a dynamic page that can be customized any way you wish but be very careful when changing the Javascript or the page may not function. The page is generated from the *rFactorLive.htm* file located in the *%rFactorHOME%\rFactorHotlaps\web* directory on the dedicated server. When changing files in this directory there is no need to restart the rFactor Hotlaps service.

The *rFactorLive.htm* page is a complex web page consisting of Javascript code. It is recommended that you only modify the body of this page to suit your needs. You must include the following elements on your web page in order for the Javascript to dynamically update the page:

1. <DIV> element with id and class equal to “server”. This is where the dedicated server name will be rendered.
2. <DIV> element with id and class equal to “session”. This is where the current session information will be rendered.
3. <DIV> element with id and class equal to “progress”. This is where the current progress will be rendered. i.e. Lap 5 of 30.
4. <DIV> element with id and class equal to “track”. This is where the current track name will be rendered.
5. <DIV> element with id and class equal to “flag”. This is where the current flag state will be rendered. Note: Using Javascript this data can be used to select an image file.
6. <TABLE> element with id equal to “livetable”. This is where the live standings will be rendered.

Along with the above elements, the page includes one special comment. The comment “<!--@LIVEURL-->” will be replaced with one of the URLs specified in the *rFactorHotlaps.properties* file. This URL is intended to be used for a live video feed that is being fed from multiple servers. The URL selected will be random in order to spread the load among the servers/URLs specified in the properties file.

No CSS styles are generated by the rFactor Hotlaps service. All styles used are defined within the Javascript in the rFactorLive.htm page. Edit these styles to best suit your needs.

If you are an accomplished HTML and Javascript developer and wish to use the AJAX feed for your own purposes, you can use the following URL to obtain and XML feed of the live data.

http://<yourservice>:<http_port>/rFactorLive?id=livedata

Advanced Topics

The following items are for more advanced server administrators.

Server Status XML Link

Using the rFactorStatus link an XML feed can be obtained listing the current dedicated server status. A developer can use this data with an ASP or PHP application to display the current status of the dedicated server on a web site.

<http://gs8.mtco.com:27012/rFactorStatus>

Sample XML:

```
<serverStatus numDrivers="3">
  <track>Martinsville</track>
  <sessionStatus>60 mins Remaining</sessionStatus>
  <category>USA Latemodels</category>
  <driverList>PTRKennyVette</driverList>
  <driverList>PTR86Low</driverList>
  <driverList>PTRMoOutlaw</driverList>
  <session>Practice</session>
</serverStatus>
```

Changing the Stored Data

All data is stored in XML format. The Hotlaps data is stored in a file named *rFactorHotlapsData.xml* in the *%rFactorHOME%\rFactorHotlaps* directory. Race results by default will be stored in *%rFactorHOME%\rFactorHotlaps\results* but this can be changed using the *results_dir* property in the *rFactorHotlaps.properties* file.

Edit the XML files using a good XML editor like XMLSpy or even the free XMLCooktop <http://www.xmlcooktop.com/>. Use the "format" option in the XML editor to re-format the XML data into a more readable state. When editing the XML be careful not to corrupt the file by leaving unmatched tags, etc.

When you change the race results data the league scoring will also change if the race being edited was run during the scheduled time for the league.

After editing any XML data you must restart the rFactor Hotlaps service using the shortcuts provided on the Start menu.

Running Multiple Instances of rFactor Hotlaps

If you wish to run multiple instances of rFactor Hotlaps on the same server there is some manual reconfiguration you must do. Assuming you currently have one instance up and running, perhaps following a standard installation, you can perform the following steps to run a second instance for another dedicated server on the same physical server.

1. Copy the `%rFactorHOME%\rFactorHotlaps` directory to the new dedicated server home directory.
2. Copy the `rFactorHotlaps.dll` file from the `%rFactorHOME%\rFactorHotlaps\plugin` directory to the main plugins directory of the new dedicated server.
3. Copy the `HotlapsPlugin.ini` file from the `%rFactorHOME%\rFactorHotlaps\plugin` directory to the root directory of the new dedicated server. This is the same place you will find the `rFactor.exe` file.
4. You must choose new ports for the new dedicated server. Edit the `rFactorHotlaps.properties` file for the new instance and change the `http_port` and `ipc_port` to new values that are not currently being used. Also, edit the `HotlapsPlugin.ini` file you copied in step #3 and set the `ipc_port` to match the properties file.
5. The new rFactor Hotlaps service must be given a unique name so the Windows Service Manager can work with it. Edit the `wrapper.conf` file located in the new `%rFactorHOME%\rFactorHotlaps\config` directory and change the following lines to a unique name (perhaps add a number to the default name). Example:

```
wrapper.console.title=rFactor Hotlaps Service 2
wrapper.ntservice.name=rFactorHotlaps2
wrapper.ntservice.displayname=rFactor Hotlaps Service 2
wrapper.ntservice.description=rFactor Hotlaps Service 2
```

6. At this point you may wish to delete the `rFactorHotlapsData.xml` file and all the race results files from the new instance.
7. From the `%rFactorHOME%\rFactorHotlaps` directory, run the `InstallService.bat` followed by the `StartService.bat`. If you receive a “press any key” message then something is not right. Check the log files.
8. To remove an instance of rFactor Hotlaps → From the `%rFactorHOME%\rFactorHotlaps` directory, run the `StopService.bat` followed by the `UninstallService.bat`. Remove the `rFactorHotlaps.dll` file from the dedicated server’s plugin directory. After doing this the rFactor Hotlaps directory can be deleted.