

REFBOX BETA Version

According to what have been decided during the last MSL workshop, CAMBADA has updated the RefBox to a new version, which is now ready for beta-testing. This version includes the following new changes:

- Commands are now sent to the BaseStations using a JSON format (see below)
- Colors are no longer relevant. Teams are now identified as “Left” or “Right” as seen from the RefBox position. Their names still appear on the RefBox and Referee/Audience clients.

To test this version, you can make a clone from

<https://github.com/RoboCup-MSL/RefBox2015/tree/jsonComm>

1. NEW JSON COMMAND FORMATS

Formats send by the RefBox no longer use the single char format. Instead, a JSON packet is send to both BaseStations for each command (message) delivered by the RefBox.

Two formats are currently used and are the following:

Example 1:

```
{
  "command": "KICKOFF",
  "targetTeam": "224.16.32.127"
}
```

In this example, field “command” describes the command sent by the RefBox (In this case a KICKOFF), while field “targetTeam” indicates the unique ID of the team to which the command is assigned.

We have decided to use the *IP Multicast Address* as the unique team ID instead of the Team Name, since, in the past, some of the competing teams have made last minute requests to slightly change the Team Name just before the start of a competition. Since the IP Multicast Address is fixed and defined in the Rules, we believe this option is a better solution to uniquely identify each team.

In those cases where the command is destined to both teams (e.g. “STOP”, “START”, “DROPBALL”, ...), the “targetTeam” field has an empty string (“”).

Example 2:

```
{
  "command": "SUBSTITUTION",
  "targetTeam": "224.16.32.127",
  "robotID": 3
}
```

This format is used for commands that require the identification of a single robot as is the case of the new substitution procedure.

2. NEW CONNECTION PROCEDURE

In this RefBox version, whenever a BaseStation makes a connection, the RefBox assistant is asked to select either "LEFT" or "RIGHT" to indicate the 1st half side of the connecting team.

In the RefereeClient commands assigned to a team, the Team Name will be shown instead of "Cyan" or "Magenta".

Upon establishing the connection, the following command is sent:

```
{  
    "command": "WELCOME",  
    "targetTeam": "224.16.32.teamID"  
}
```

NOTE: Special case – when the same team connects both as "LEFT" and "RIGHT" for Testing, Demo or Simulation purposes.

In this case, the "team" connected as "LEFT" will be assigned, for messages purposes, the IP Multicast Address "224.16.32.teamID:1"

Therefore, the same team will be able to recognize commands sent to robots with the same IPs but belonging to two "distinct" teams by "224.16.32.teamID" and "224.16.32.teamID:1".