

# IP Networking at the Event

This document describes the IP configuration used at events, both on the fields and in the pits, potential issues and workaround configurations.

## TE.AM IP Notation

The notation TE.AM is used as part of IPs in numerous places in this document. This notation refers to splitting your four digit team number into two digit pairs for the IP address octets.

Example: 10.TE.AM.2

Team 12 - 10.0.12.2

Team 122 - 10.1.22.2

Team 1212 - 10.12.12.2

Team 3456 - 10.34.56.2

## On the Field

This section describes networking when connected to the Field Network for match play

## DHCP (typical configuration)

The Field Network runs a DHCP server with pools for each team that will hand out addresses in the range of 10.TE.AM.20 and up with subnet masks of 255.0.0.0

- OpenMesh OM5P-AN or OM5P-AC radio - Static 10.TE.AM.1 programmed by Kiosk
- roboRIO - DHCP 10.TE.AM.2 assigned by the Robot Radio
- Driver Station - DHCP ("Obtain an IP address automatically") 10.TE.AM.X assigned by field
- IP camera (if used) - DHCP 10.TE.AM.Y assigned by Robot Radio
- Other devices (if used) - DHCP 10.TE.AM.Z assigned by Robot Radio

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## Static (workaround configuration)

It is also possible to configure static IPs on your devices to accommodate devices or software which do not support mDNS. When doing so you want to make sure to avoid addresses that will be in use when the robot is on the field network. These addresses are 10.TE.AM.1 and 10.TE.AM.4 for the OpenMesh radio and the field access point and anything 10.TE.AM.20 and up which may be assigned to a device still configured for DHCP. The roboRIO network configuration can be set from the [webdashboard](#).

- OpenMesh radio - Static 10.TE.AM.1 programmed by Kiosk
- roboRIO - Static 10.TE.AM.2 would be a reasonable choice, subnet mask of 255.255.255.0 (default)
- Driver Station - Static 10.TE.AM.5 would be a reasonable choice, subnet mask must be 255.0.0.0
- IP Camera (if used) - Static 10.TE.AM.11 would be a reasonable choice, subnet 255.255.255.0 should be fine
- Other devices - Static 10.TE.AM.6-.10 or .12-.19 (.11 if camera not present) subnet 255.255.255.0

## In the Pits

New for 2018: There is now a DHCP server running on the wired side of the Robot Radio in the event configuration.

## DHCP (typical configuration)

- OpenMesh radio - Static 10.TE.AM.1 programmed by Kiosk.
- roboRIO - 10.TE.AM.2, assigned by Robot Radio
- Driver Station - DHCP ("Obtain an IP address automatically"), 10.TE.AM.X, assigned by Robot Radio
- IP camera (if used) - DHCP, 10.TE.AM.Y, assigned by Robot Radio
- Other devices (if used) - DHCP, 10.TE.AM.Z, assigned by Robot Radio

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## Troubleshooting

The most common issue is to have a mix of static and DHCP configured devices. This should be less problematic with the 2018 configuration, but should still be avoided.

Another common issue is using a subnet mask of 255.255.255.0 on the DS PC. This configuration will not communicate with the FMS system which is on a 10.0.100 address.