MANAGED SERVICES

meshO

meshO radios capture punches at controls and send that information back to the arena in real time. This information is used to update the live results screens and by commentators. The radios form a “mesh” network, which means that the information can travel through many nodes of the network to find its way back to the Prime unit (which is where we read the information).

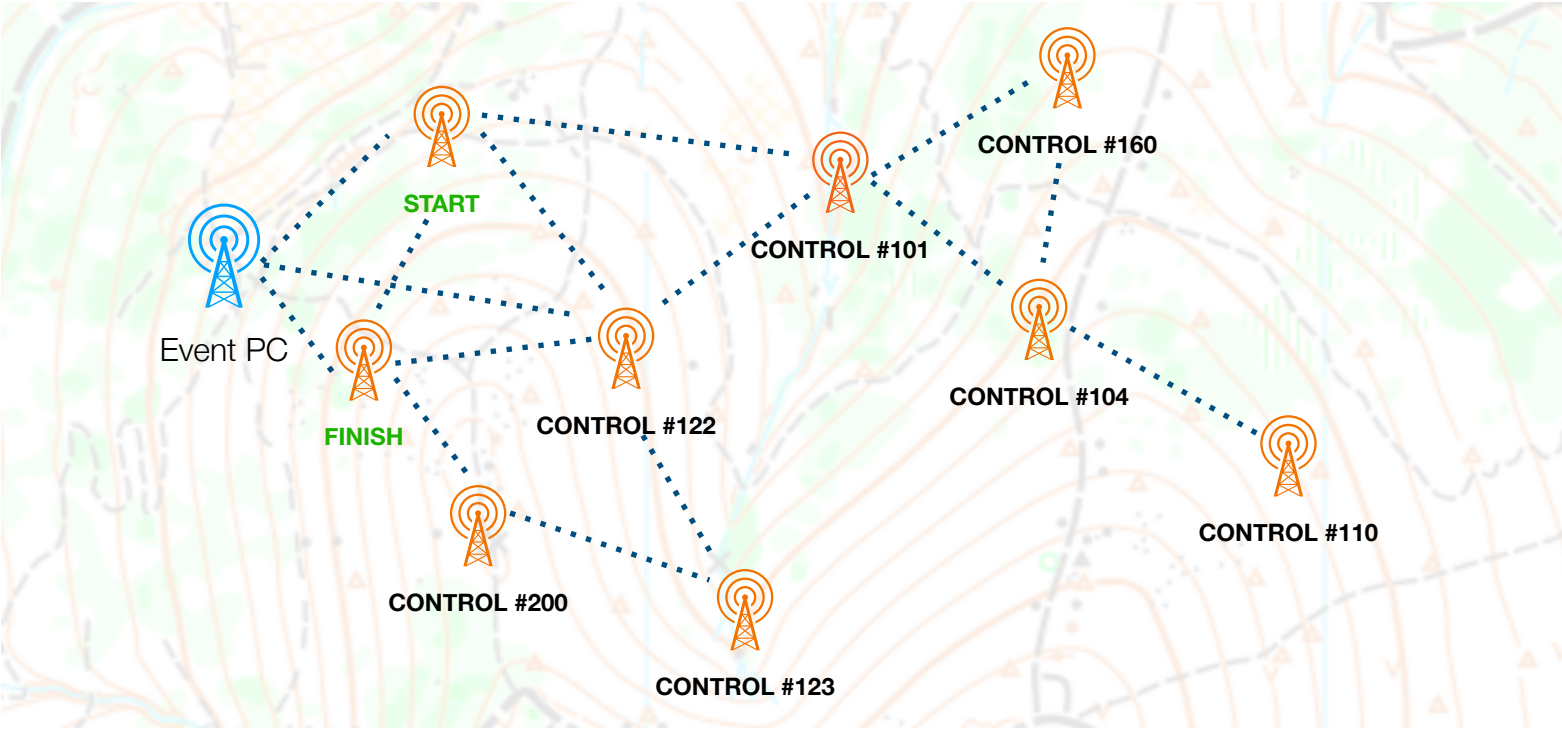
meshO offers managed services where we supply the radios, mounting brackets, undercover results screens, PA system, commentary setup including online streaming audio, online live results, and the labour to set up, support, and pack up.

We will	You will
• Supply radio controls for each of the events, providing support to the setter in placing them if required • Work with the course planner/controller to plan out the ideal locations for the radio controls • Supply and install up to 10x under-cover 4K TV screens in your arena with live results including the radio punches • Operate a unified or separate MeOS instance and control software for the meshO units and results screens • Supply silent power to the setup, including for your computers (up to 500 watts), via a Tesla vehicle-to-load setup and/or battery power stations. • Supply and install a commentary setup consisting of 4 speakers, mixing desk, wireless microphones, computer with live results feed in a marquee with table and chairs • Supply all the labour required to set up and pack up all the meshO infrastructure, and a minimum of one person to provide monitoring and support during the event	• Inform participants in all bulletins and communications that meshO will be providing radio controls and live results screens, using meshO branding where possible • Include the meshO logo on the map • Provide assistance syncing competitor data, or access to the central MeOS database if in use

WHICH CONTROLS ARE GOOD FOR RADIOS?

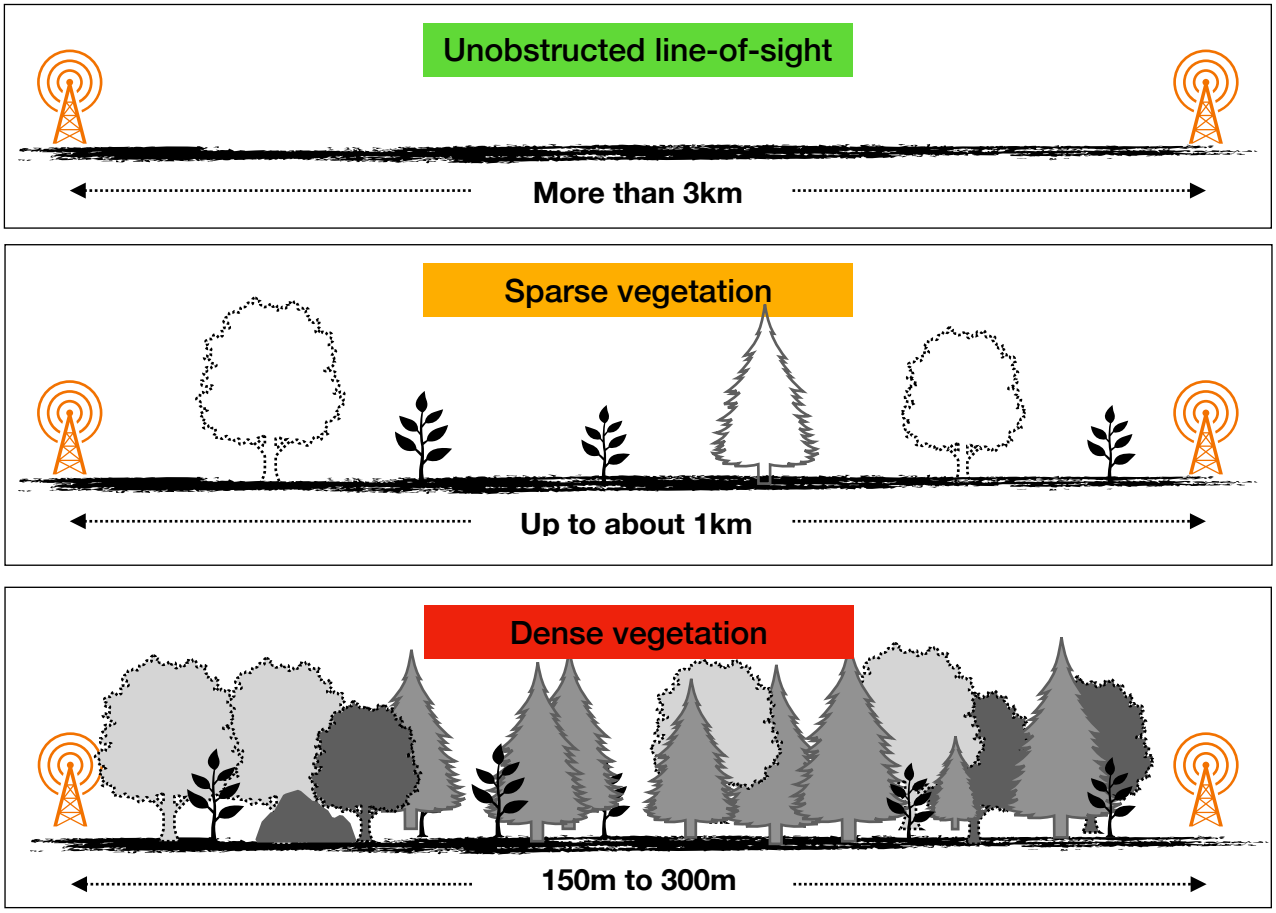
In general, it's good to have radio controls at the finish, the control before the finish, pivot controls and a control or two mid-way through the course. On the day the meshO team will have spare radios to use on high antenna poles if required to close any gaps. Think about having some coverage for each course and it tends to work better if radios are clustered rather than spread out (see next page about range).

More radios are better than fewer, as they'll build a stronger network. It then also gives the flexibility on which radios to display on the screens as well as more information for the commentary team.



RANGE

The radio range is the most important factor to consider when deciding which controls to place radios on. The range of the radios is dependent on the terrain: in particular the vegetation, the topography, and the distance between radios. It's impossible to accurately predict how far each radio will transmit or receive, but the following rules of thumb will help:



Make use of the mesh network - if a radio control is behind a hill or a long distance away, use intermediate radios so that the information has a path back.

When the meshO units are placed in the field we have software that will monitor the signal strength between each radio in the network. If we find that a unit can't reach the network we can place extra radios (at a rough mid-point) to join the nodes together. We can assist with this on the day.

SUPPORTED UNITS/SI CARDS

meshO, as with all other radio controls on the market, listen for short range radio (SRR) transmissions from either BSF8-SRR, BSF11 or SIAC cards. We recommend you use your regular controls and rely on competitors having a SIAC card as this should cover 80-90% of people. We will provide two BSF8-SRR Finish units so that we capture as many finish punches as possible, as this will capture both SIAC air punches and manual punches. It is certainly possible to use BSF8-SRR units at other control sites too if you have them (especially heavily used ones like pivots).

SportIdent units compatibility with meshO radios

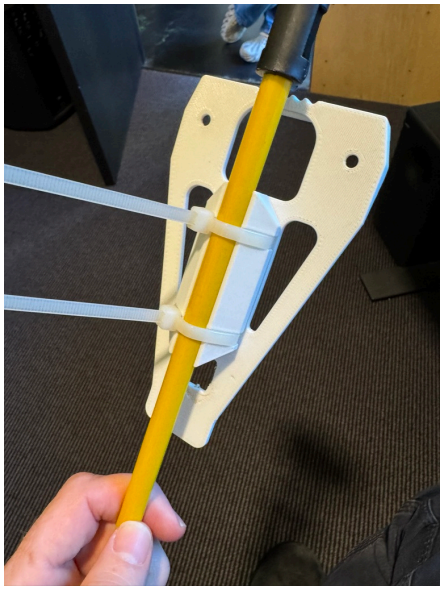
Form factor	Description	Configuration	SI-Card	SIAC
	**BSF7** Direct punching or combined direct punching / contactless AIR+ mode with a range of about 30 cm Link to product page	"Send last record" mode to be set in SI Config+	Not compatible with meshO radios	Radio punches sent by SIAC to meshO radios
	**BSF8** Direct punching or combined direct punching / contactless AIR+ mode with a range of about 30 cm Link to product page	"Send last record" mode to be set in SI Config+	Not compatible with meshO radios	Radio punches sent by SIAC to meshO radios
	**BSF8-SRR** As BSF8, *in addition has short range radio (SRR) module* to transmit punches from old SI cards Link to product page	"Send last record" mode to be set in SI Config+	Manual punches transfered by SRR to meshO radios	Radio punches sent by SIAC to meshO radios
	**BSF9** Direct punching or combined direct punching / contactless AIR+ mode with a range of about 50 cm Link to product page	"Send last record" mode to be set in SI Config+	Not compatible with meshO radios	Radio punches sent by SIAC to meshO radios
	**BS11-BS** and **BS11-BL** SPORTident AIR+ system, only SIAC cards can be used, range 180 cm for BS11-BS and 300 cm for BS11-BL. Intended use: MTBO, SkiO Link to product page: BS11-BS, BS11-BL	"Send last record" mode to be set in SI Config+	Not compatible with SI-cards	Radio punches sent by SIAC to meshO radios

If event is contactless (and using BSF7/8/9 units) and most people have SIAC then majority of punches will be recorded, so no need to change all the controls to BSF8-SRR units. However, for important controls (pivots, last control, start, finish), it is recommended to use BSF8-SRR.

A requirement for SIAC punches to work at radio controls is that your SI Control Unit needs to be configured to tell the SIAC card that it needs to transmit the SRR punch. This is done by using SportIdent Config+ and setting the unit to "Send last record". Only do this for the controls that will have a meshO radio.

MOUNTING ON CONTROL STANDS

We will send you brackets to install on your control stands in advance of your event. We will supply one per radio control per event. This will make it easier on the day, where you will only need to clip the radios in to the brackets after turning them on.



The bracket will have a generic adaptor designed to mount via supplied zip ties onto a variety of control stands (square, circular cross sections etc) as well as diameters. You will then screw the bracket onto the adaptor with two supplied screws.

Brackets may also be permanently mounted to your control stands if your stands have a suitable flat surface to fix the bracket to. If you would like to do this please contact us in advance.

OPERATING RADIOS

The radios need to be turned on when they are placed in the field. They turn on by swiping a magnet on the side of the unit. It will come alive and start flashing some LEDs. The first thing it does is to find the Prime unit on the network, and it shows a searching sequence on the LEDs during the search. This can be almost immediate, or can take around 30 seconds to a minute. If Prime has been successfully contacted then a single LED will blink once a second. If the searching never ends, that means we'll need more radios to complete the network.

We find that the best way to place radios is to first turn on meshO Prime (this creates the network), and then place the radios from closest to furthest away, so that the network builds outwards and we can check that a radio has successfully joined the network when it's turned on. We will be there on the morning of each event to get the Prime going and assist turning the radio controls on.

Radio punch limitations

Only SIAC air punches are captured (unless every control at a radio has a BSF8-SRR unit). Some radio punches are just never sent or received by the hardware (inherent SportIdent limitation). If network issues occur, for example if a control stand is knocked over and the radio can't communicate on the network, meshO will attempt to recover (and resend punches), but it's possible that punches will never be sent. When a competitor downloads, any missing punches will be corrected and updated live on the results screens.

Battery

The batteries in the meshO units are good for at least 24 hours of continuous operation. We will charge them overnight so they are full the next day.

OPERATING SYSTEM

Option A - MeOS

If you are running meOS, we request the following architecture:

- You run the primary event PC in server mode, backed by MySQL. You ensure you are running the latest version of MeOS. Your PC is the one that will be used for competitor updates, punch downloads etc.
- On the day, you join your PC to our WiFi Network
- You are welcome to run an independent backup as well, that is disconnected from the main setup
- Our laptops will connect to your database server over the network with the credentials you provide. Our machines will collect the radio punches (including updating into MeOS which your primary event PC will receive) as well as drive the results screens.

Option B - Other (SI Timing, OE, ...)

If you are running SI Timing, OE or something else, we request the following architecture:

- You get us the course, class and competitor data in IOF XML format by 5pm the day before
- You run from your PC setup on the day completely independent of meshO
- We run MeOS in parallel with your setup, including collecting competitor downloads and any competitor changes (e.g. SI stick changes). We will man our computer for this.
- We collect the radio punches, which will only go into our MeOS setup and we will drive the results screens.

FINISH

We will supply two BSF8-SRR units for the finish, which you are welcome to use in air mode or manual punching for all competitors (we can configure on the day). Our radios are independent units, which will be mounted alongside the BSF8-SRR units and will receive the finish punches in real time for the live results.

STARLINK

Assuming that we have a good view of the sky from the results trailer, the meshO network will provide internet access via our Starlink system which you are welcome to use for organisers (not competitors). For example, for uploading live results.

PREPARATION

When	To-do
3 weeks out	Provide us with a nominated address so we can ship meshO radio brackets to you for placing on the control stands (if you don't have any already)
2 weeks out	Plan which controls will be radio controls
2 weeks out	If using meOS, make sure you have the latest version installed as well as MySQL Server, and give the login details to the meshO team
2 weeks out	If using another system (e.g. SI Timing / OE) get the courses and entries details in IOF format to the meshO team for test loading, and have the final versions sent by 5pm the prior evening
2 weeks out	Program the radio control SI Units to send last record
1 week out	Plan the location for the results screens trailer, as well as check on suitable access for the meshO Telsa vehicle which supplies power to the system. We can also supply 500 watts of power to your computer and other gear on the day. If there is no access for a Tesla, advise if you can supply a generator capable of delivering 600 watts continuously
2 days out	Advise the meshO team when you will need access to the controls to place them in the field on the day (e.g. 8am)
Race day	If using MeOS, connect the main laptop to the meshO WiFi access point (details will be supplied)
Race day	Place the controls in the field, turning them on with the magnet as you go as per the instructions above. The meshO team would place them, however we want to have a run!
Race day	Guide the meshO team as to where you want the results screens and Tesla located

SUPPORT

For support please contact Justin or Tate.

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