



HITS – HIGH INTEGRITY TELECOMMUNICATIONS SYSTEM

FREQUENTLY ASKED QUESTIONS

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GENERAL

1. What is HITS?

- HITS is a highly resilient satellite-based communications network that is independent of the main UK telephone network. It will however be able to make calls across the UK telephone network if required.

2. When will it be used?

- HITS will be an “always available” system that will be used in any emergency event where normal communications are severely disrupted. In a worst case scenario, the PSTN (UK telephone network) is not working and mobile phone networks are either unavailable or congested. HITS will work in either or both of these circumstances, and will allow national, regional and local levels of response to communicate during the response and recovery to a major incident.

3. Why do we need it?

- HITS is designed to fill a capability gap in UK telecommunications resilience. A complete failure of the PSTN combined with congested mobile phone and commercial satellite networks is a possible consequence of emergency events such as flooding or widespread power cuts. HITS is designed to continue functioning even when all other means of communications are not available.



4. How much will it cost?

- The Cabinet Office will cover the HITS service costs for the core network of HITS sites. This consists of sites in each of the Police Force Areas / Local Resilience Forum areas in England and Wales; sites at each of the Devolved Administrations; and Cabinet Office crisis management facilities. Expansion of the system to further sites and associated costs are currently being assessed.
- As HITS will allow calls 'break out' from the HITS network onto the PSTN or mobile networks, a billing mechanism is being established that will allow the sites to pay for these calls. However, there should be no call costs for HITS users for any calls made during an emergency response scenario.
- There may also be some costs involved for sites when preparing their site for installation. The site survey report will detail all necessary pre-installation works that a site needs to carry out, and sites will be responsible for funding these works. However, the Cabinet Office is prepared to reimburse sites for any HITS related works up to a £5k cap.

5. How long will the system be operational?

- The HITS service will run for an initial period of 10 years, until the end of March 2019. At the end of this period there will be an assessment phase to assess whether more suitable options have become available during the operational lifetime of the system. An option to extend the service will also be available.

6. Who is building the system and running the service?

- The HITS service will be provided by Paradigm Secure Communications, a division of EADS Astrium. Paradigm was awarded the PFI contract for the provision of secure space-based communications to the UK Ministry of Defence in 2001 – HITS will be procured under this contract.

7. What parts of the country will be covered by HITS?

- HITS equipment will be installed at sites in every Police Force Area in England and Wales. In addition, one HITS site will be installed at each of the three Devolved Administrations, as well as at the Cabinet Office crisis management facilities (such as COBR). This is referred to as the Core Network.



8. How will HITS affect my working life?

- Although the primary function of HITS will be to provide a resilient emergency communications system in the event of a widespread failure of the PSTN and mobile networks, it can also be used as part of your routine operations. For example, HITS will allow secure conversations outside of emergency response situations.
- HITS should be included as a key element of your emergency plans - especially the location of the nearest site if you do not work in a HITS equipped site. If you have an emergency response role you will need to discuss with your organisation whether you will need to attend familiarisation sessions as part of the HITS installation process, or to attend a formal training course (Boxed Kit sites only).
- You and your organisation should also set up a regular HITS exercising schedule. This will improve user familiarity with the system as well as ensure that the HITS equipment is updated regularly. It will also help the supplier to monitor the performance of the HITS infrastructure at your site. CCS recommends that all HITS equipment is connected at least on a monthly basis.

9. What do I need to do to make HITS work?

- HITS is a stand-alone communications network that uses very resilient technology. The effectiveness of the system is not just based on technology however – even the best system is ineffective if none of its users know where it is or how to use it. To make HITS work you should be aware of the system and where it is located. You should also discuss with your team and decide if you may have a need to use the system in an emergency (for example, if you would provide support to Gold Command during an emergency). If you do, then you need to read the HITS User Standard Operating Procedures and familiarise yourself with the system.
- Even if you may never need to use HITS, you should ensure that HITS is included in your emergency response communications plans.

10. Is HITS designed to be used for terrorism-related incidents only?

- No. HITS is designed to be a communications tool that will function when other means are available. Its purpose is to allow response and recovery to continue whilst normal communications channels are re-established. The cause(s) of the telecommunications failure(s) in the first case is not important – however the response arrangements for civil emergencies and terrorism-related incidents may



differ so this needs to be considered in your plans.

11. Will there be training available for HITS?

- As part of the installation process, some familiarisation with the system will be provided when the site installation is completed. In depth training is not required for most users as the system is very intuitive and user guidance will be supplied with the equipment at installation.
- Formal training will be required for responders based at 'Boxed Kit' sites (see FAQ 32), as they will be required to set up the equipment themselves and operate it for the duration of the event. For these sites, "refresher" training will be available on an annual basis to cater for new staff as well as those who are already in their role.

12. How resilient is the system?

- There are many aspects of HITS that provide resilience and assure connectivity when needed. Firstly, the system operates both via a terrestrial connection and a satellite link. If the terrestrial connection is unavailable then the satellite link will be available to maintain the service. If this happens during a call, then there will be a 10 to 15 second delay as the call is re-established via the satellite – the call will not be lost however.
- The system has guaranteed bandwidth to the satellite which means that there will always be some capacity on the satellite element of the network reserved for HITS.
- HITS will connect to the Skynet5 satellites, which are the most advanced military communications systems that the UK has access to. They are modern satellites that are designed to resist attempts to interrupt communications through interference and jamming.
- The satellite element of HITS will operate at x-band frequencies, which provide the best signal strength through all types of atmospheric conditions. The satellite dish may also be protected by a radome where conditions allow (see FAQ 30).
- In some circumstances the satellite connectivity may be unavailable. This can be due to the dish losing alignment or other independent technical problems at the site. In this eventuality the terrestrial connection at each site will be able to provide connectivity to HITS.
- If neither the satellite connection nor the terrestrial connection are available at the site (perhaps due to lack of fuel for generators during a power cut), then a Transportable terminal can be deployed at the site or nearby Transportable



Deployment Site to provide emergency communications (see FAQ 13).

13. What are the HITS Transportables Terminals and how do they work?

- The Transportables Terminals (or just Transportables) are a mobile version of the HITS service, managed by the supplier (Paradigm) and based around the country. There are three sets of Transportables, and each set contains a portable satellite antenna along with HITS phones, laptops and a printer. They will usually be deployed to HITS Transportable Deployment Sites (see FAQ 24).

14. Who will be responsible for deploying the Transportables?

- The Transportables will be based at Paradigm sites and Paradigm will manage the Transportable service. Paradigm is responsible for transporting them under normal circumstances but assistance may be required from the requesting authority/organisation if there are transport difficulties (e.g. by providing a suitable boat if the area is flooded)
- Once the Transportable has reached the intended deployment site, Paradigm staff will set up the equipment and ensure a connection to a Skynet5 satellite. They will remain on-site for the initial period of deployment to ensure that the equipment continues to work properly.
- Paradigm personnel will remain with the equipment for the full period of the deployment, and may be rotated as required depending on the duration of the deployment.
- Paradigm staff will also be responsible for disassembling the Transportables once normal telephony is restored to the affected area, and for making it ready for the next deployment as soon as possible.

15. Where are the Transportables deployed to?

- It will be the responsibility of the requesting organisation to determine the precise location for deployment, which will ideally be one of the pre-determined HITS Transportable Deployment Sites. Paradigm will already have the precise locations for these sites. If deployment to another site is necessary, then the requesting organisation must be clear and specific when communicating the location to Paradigm (which may need to be done from a HITS fixed location).



- More information on the deployment procedures & criteria for HITS Transportables will be contained in the HITS USOPS (User Standard Operating Procedures). The USOPS will be sent to all HITS sites prior to installation.
16. How do I request a transportable if no other networks are available?
- HITS should always be used to request deployment of a Transportable if possible. In this extreme case, where there has been a no-notice loss of all routine communications networks, then HITS will have to be used to request deployment anyway.
 - If a responder is unable to access their HITS equipped site, and no other communications are available, then that responder will have to request deployment of a Transportable to a HITS Transportable Deployment Site by contacting a neighbouring Police Force Area (using Airwave or by sending a messenger for example). They would then use their HITS to contact the Cabinet Office to request a Transportable.
 - For deployment during office hours, responders should contact the Cabinet Office CCS using HITS – the directory entry is called TRANSPORTABLES EPOC – 1. Should this number not work (it is a landline or PSTN number) then responders should try TRANSPORTABLES EPOC - 2 (which is a mobile number).
 - For deployments out of hours, responders should contact the Cabinet Office using HITS – the appropriate number is in the HITS online directory which is accessible via a HITS phone. Responders should look for TRANSPORTABLES EPOC – 3 in the directory – this is a HITS network number.

TIMESCALES & ROLLOUT

17. When will HITS be installed in my area?
- A detailed rollout plan is being prepared. Each site will be installed during a specific rollout phase – for more details please contact the HITS Team.
18. What do I need to do?
- Firstly, the most important task is to confirm the site location for HITS in your Police Force Area.



- Next, a site survey will be arranged for an appropriate time before your scheduled installation (approximately six months before). The results of the survey will confirm the preparatory works needed before installation can begin.
- You may also need to apply for planning permission. This can take some time so you should apply as soon as possible following the HITS site survey. You can also contact your local planning authority in advance to establish what type of planning permission you might need.

19. Can we opt-out of the system if we move sites?

- Each Police Force Area must have at least one HITS site. If you have to move sites after the installation, then HITS equipment must be moved to the new site or to another location with the necessary resilience requirements in your Police Force Area (see also FAQ 28).

20. Will I be able to choose when my site is installed?

- There will be a certain degree of flexibility in the rollout schedule, and the CCS will confirm with each site whether their rollout phase is suitable.

21. When will my site be surveyed?

- There is some flexibility in the timing of the site survey, but it should be done about 6 months prior to installation. This is so that there is time for any work to be carried out, but not too much time for the information from the site survey to become out of date.

22. What will the site surveys cover?

- The site surveys will assess the site's readiness to receive the HITS equipment, and will help inform you as to what preparatory work will be required before installation.
- The surveys will include details on site location, key contacts (e.g. the Site Installation Design Authority or SIDA), cabling, power, installation metrics, building properties and characteristics (including any hazardous materials), and equipment room details (such as available space, cooling and power etc).
- Detailed reports will be produced following each survey, including a HITS installation design that will confirm the technical details of the installation for that site.



23. How many site surveys will I need to have?

- The current Cabinet Office position is to have only one permanent HITS installation in each Police Force Area. However, some sites may need revisiting to confirm details not covered in the initial survey, or if certain aspects of the site change before installation.

24. Does my HITS Transportable Deployment Site also need surveying?

- We are not intending to survey the Transportable Deployment Sites, as the requirements for a deployment of a Transportable are less precise or stringent as they would be for main HITS sites. However, we will be producing guidelines for the HITS Transportable Deployment Sites so that they can consider in advance how and where to deploy the Transportables (i.e. line of site to the satellite, proximity to indoor office space, RadHaz and other H&S etc).
- As there is no permanent HITS equipment installed at HITS Transportable Deployment Sites, most Police Forces will have more than one designated HITS Transportable Deployment Site.

INSTALLATION

25. What are the installation requirements?

- The main requirements for HITS installation are that the building has appropriate security (suitable for a system accredited to RESTRICTED) and resilience (i.e. in terms of location, power supply etc). In addition, the site must be one that is used for emergency response – there is no point installing HITS in a site if the site will not be used for emergency response!

26. How long will installation take?

- Installation will take anything from 2 days up to 3 weeks, depending on the site.

27. How will I know what I need to do before installation?

- There will be site surveys carried out on your site prior to installation. These should reveal any necessary building works that you may have to carry out before installation.



- You should contact your local planning authority well in advance of the scheduled installation window to determine what (if any) planning permission is required.

28. What if we move sites?

- Each Police Force Area must have at least one HITS site. If you have to move sites after the installation, then HITS equipment can be moved to the new site, though the preference is to avoid site moves as far as is possible. Before receiving a HITS installation, it is imperative that you consider how long your proposed HITS site will be in operation for. If it is less than two years then we might consider not installing HITS at that site, or moving your scheduled installation window to a later stage of the rollout when the new site will be ready.
- Over the 10 year lifetime of the service several sites may need to move due to unanticipated factors. Relocating the HITS equipment will incur additional expense and leave an area without HITS for a period of time, so we are keen to avoid relocation where possible.

29. What if I need planning permission?

- Your site will be surveyed about 6 months prior to installation. The site survey will not necessarily reveal however if planning permission will be required for your site. It will be your responsibility therefore to contact your local planning authority to determine what, if any, planning permission will be required.
- Advice and information to assist with applying for Planning Permission will be provided to each site prior to their site survey as part of their pre-survey documentation.

30. What is a radome?

- A radome is a dome-like cover for a satellite dish that will protect the dish from interference from wind and precipitation whilst allowing the communications signals through with little interference. It is a contraction for Radar Dish Dome.
- The satellite dish can be mounted in one of two ways; either with a penetrating mount (called kingpin) or a weighted mount (NPM or non-penetrating mount) which will rest on the roof. The NPM cannot accommodate a radome as the ballast required would be excessive. It is therefore preferred that sites use the kingpin mount because this will allow a radome to be fitted. This will make the installation more resilient against high winds and precipitation.



31. What is the weight of the dish and/or radome?
- The total weight of the dish and/or radome will vary according to the type of installation. A non-penetrating mount is heavier than a penetrating mount because it must be weighted down with ballast. If a site is high up and/or subject to high winds then more ballast will be required. Where a kingpin or post is not used then the mounting assembly will ensure that the ballast weight is evenly distributed on the roof.
32. What can I do if I cannot put a radome or satellite dish on my site?
- If it is not possible to install an antenna with a radome, then it may be possible to mount the satellite dish without the radome. The dish on its own will weigh less and will be less obtrusive, so may not require planning permission or structural works.
 - If neither a radome nor an antenna can be mounted on your building, then the first option is to look for a suitable building nearby. A side wall might also be a possibility if the roof is not suitable. The dish and radome can be up to a kilometre from the site itself, but it is preferable to have the dish and radome on the site.
 - If neither a dish nor a radome can be installed at or near your site, then you may be supplied with fixed baseband equipment supported by a boxed satellite antenna. This will reside permanently at your site, and will complement the HITS terrestrial connection. If during a crisis the terrestrial connection becomes unavailable, then the boxed antenna can be used to connect to the HITS network. This is considered a last resort however as the boxed satellite dish will not be permanently set up ready to use.
33. What documentation will be required for HITS to be commissioned at my site?
- The HITS equipment will be supplied with technical operating manuals, and all sites and users will also have a soft copy of the HITS User Standard Operating Procedures.
 - In addition, each site must sign a HITS Site Agreement and HITS End User Agreements. These short documents are required for legal and accreditation reasons, and will outline the responsibilities that sites will have when their personnel start using HITS.



34. Can the 100m limit from equipment rack to phones be extended?
- This distance refers to the maximum cable length between the equipment room containing the HITS equipment rack, and the location of the HITS phones. If the distance is more than 100m then standard Cat5e cables will not work. There are a number of alternative options to extend this distance using fibre-optic cables - in this case the phones will require power from a socket in the communications room.
 - The HITS laptops will require power from a plug socket in any case. They will however operate on battery power alone for short periods.
 - There is also a maximum recommended distance of 150m between the HITS equipment rack and VSAT or satellite dish antenna. Any distance over 150m will require a more complicated installation utilising fibre-optics.
35. What are the security requirements for the equipment room?
- HITS is a secure communications system accredited to RESTRICTED. Therefore, some basic security measures are required for every site before HITS can be installed and operational.
 - Access to the site as a whole should be controlled, and in addition to this the equipment room where the HITS rack will be will need to have controlled access as well. This means that it needs to be locked, and the keys (or access codes for electronic locks) should be kept by a limited number of personnel who have a genuine need to access the equipment room on a routine basis. Further to this, the HITS equipment rack should be locked and the keys managed by the site HITS Information Security Officer.

TECHNICAL INFORMATION

36. What is the transmission frequency?
- HITS will operate on the x-band frequency, which provides the most reliable connection and signal strength in inclement weather.
37. What type of network does the system use?
- HITS is currently based on a “hub and spoke” style of network.



38. What satellites is the system based on?
- The HITS satellite connection will operate using the Skynet5 constellation of satellites. A Skynet5 satellite weighs about 4700 kilograms, has two solar panels each about fifteen metres long, and has a power budget of five kilowatts. It has four steerable transmission dishes, and a phased-array receiver designed to allow jamming signals to be cancelled out. They will also resist attempts to disrupt them with high-powered lasers.
39. What equipment will the system be supplied with?
- HITS will usually be supplied with three digital phones, three laptops, and one laser printer. These equipment numbers are guidelines; it may be that some of the larger sites get more equipment and the smaller ones less. The site will be asked to propose its requirements as part of the site survey process.
 - Each site will be able to accommodate up to a maximum of 10 phones and laptops, although for capacity reasons most sites will on average have three of each. There will also be at least one networked printer per site.
40. How are the phones powered?
- The HITS phones will normally receive their power via an Ethernet cable from the HITS equipment rack. This means that in most cases they will not need access to power socket.
 - However, for those sites where the communications room (where HITS will be used) is more than 100m from the HITS equipment rack, a different fibre-optic cable will be used to carry the signal from the HITS phones. As fibre-optic cables cannot carry an electric current, the phones will need to be plugged in to a power socket in the communications room.
 - In some circumstances, the communications room may be very close to the HITS equipment rack but there may also be a fibre-optic communications network already installed at the site which HITS will use. In this case, although the HITS phones may be relatively close to the HITS equipment rack, they will still need to be plugged into a power socket.
41. What type of equipment will the Transportables and Boxed Kit be?
- The Transportable and Boxed Kit antenna will be the SWE-dish CCT-120 portable satellite communications antenna.



- The Boxed kit will be supported by fixed baseband equipment at a permanent HITS site, whereas the Transportables will be able to operate independently.

42. Does the Transportable come with a generator?

- The Transportables will be equipped with their own generators, which will be sufficient to power all HITS equipment but nothing else.