

Code Dark Introductory Notes

Version 1.0, April 2025

What is Code Dark?

Code Dark is an addition to a Radiology study viewing station intended to be used in emergencies where the main radiology study systems have been compromised or their data has been lost (e.g., locked with Ransomware). The purpose is to continue to be able to view studies from the locally supported modalities so that operations may continue even during such a crippling emergency.

Physically, Code Dark consists of a bootable USB key, a cryptographically secure USB data storage device and a cheap text USB printer. These items are brought to a normal radiology viewing station that typically consists of a HP Z80 or similar PC workstations with 2 high resolution viewing monitors and two control monitors attached. This will be stored together locally in a box to be made available when a Code Dark event occurs.

When a Code Dark event occurs, the viewing station is powered down (if on) and its networking cable is reconfigured in the appropriate telecom room to connect this workstation directly through a dedicated router to the locally supported devices (e.g., MRI or CT scanners). This private network is not and shall not be connected to any other network (or the Internet).

After this network reconfiguration the normal workstation has the USB devices mentioned above plugged in and is powered on. The encrypted data storage needs to be unlocked with the provided password for that device- this data contains patient study data so must be stored with at least some level of security from unauthorized use or disclosure. The stations have either been previously configured to boot from the USB key ahead of the internal disk or you can escape the normal boot and boot from the USB key.

This will then bring up a simplified Linux installation which is running an open source Dicom server called Orthanc. After some simple required configuration steps, this Dicom server can receive studies and a web browser like Firefox may be used to view the studies and a report may be created by a radiologist for that study. That report may then be electronically signed and printed on the attached printer and carried, by hand, back to where the requestor is located. This then provides at least some level of automation assistance in a limited environment to continue providing critical services.

Required Configuration after Code Dark boots

The first requirement should only be to make sure that the system time is set correctly so that reports when signed and printed correspond to the local time that they were signed. This must be done every time the system is booted.

The second requirement is that this Code Dark instance needs to have its networking parameters, Dicom Port and AET set to what the transmitting system expects. It is an even more difficult task to change things like the network parameters for a CT scanner than it is to just make the Code Dark station pretend to be the normal Dicom server that this CT scanner normally is connected to. This task should already have been done for each location, but there are tools available as well as manual steps to make or change these parameters as needed.

The third requirement is to have a list of doctors authorized to sign reports. This can be done for each location prior to a Code Dark event, but it is likely that that list will be out of date and need correction at the time a Code Dark event occurs and the system is booted- so it will need to be edited (tools and manual steps available).

Finally, the local printer to be used to print signed reports should have been configured to work. It is possible that either the printer is not present or has failed due to long storage times (ink cartridges dry out)- so IT or the knowledgeable local user will need to attach another printer as needed. The scope of that is difficult to document in advance so you will find that information in other documents a bit thin.