

CN50 Frequently Asked Questions

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Section I: General

Q: The new specs for the CN50 tout a 5 ft. (1.5 m) drop to a “hard surface.” Does that mean we drop it on concrete?

A: Intermec performs its drop tests on a 0.650” thick steel plate over a concrete surface. This surface is just as hard as concrete and is even more punishing because it is more consistent than concrete alone.

Q: Will there be a low cost CN50 configuration without WWAN and GPS that includes WiFi and Bluetooth like the CN3?

A: There are no plans to offer a “no WWAN” configuration. The CN50 will ship either a GSM/UMTS or CDMA WWAN configuration.

Q: What are the target markets and applications for CN50?

A: In-field applications in the following target markets and applications:

- Transportation and logistics – Postal; courier; less-than-load trucking in pickup and delivery; in transit visibility; line haul trucking and management.
- Field Service – Home service and repairs; cable TV service and repair; insurance adjusting

Section II: Wireless Wide Area Network Radio

Q: Which WWAN radio is used in the CN50?

A: The radio is derived from a Qualcomm design known as “Fenway.” It is an integrated voice and data radio platform. It is not the “Gobi” radio from Qualcomm; Gobi only supports data (not voice) communications over WWAN.

Q: Which WWAN radio technologies are supported in the CN50?

A: GSM/GPRS/EDGE/UMTS (HSUPA) or CDMA 1xEV-DO rev A. HSUPA provides the latest in UMTS technologies, increasing the theoretical uplink speeds to 2 megabits per second and download speeds up to 7.2 megabits per second when supported by the installed network.

Q: What are the throughput speed capabilities of the CN50 and CN4 as compared to previous radio platforms?

A: When compared to EDGA WWAN radio technology, the CN50 using, HSUPA, has theoretical data throughput potential for downloads up to 30 faster than EDGE. Uploads are potentially 16 times faster than EDGE.

When compared to HSDPA WWAN radio technology that is used in the MC75, the CN50 using, HSUPA, has theoretical data throughput potential for downloads up to two times faster, while uploads can be up to five times faster. In addition to faster speeds and better throughput, the CN50 will offer support for 1700 MHz and will be the only rugged mobile computer supported on the UMTS network being rolled out by T-Mobile.

	CN50	CN4	CN3
UMTS Spec compliance	R5	R5	N/A
UMTS HSDPA downlink	Yes	Yes	No
UMTS HSUPA Uplink	Yes	No	No
UMTS Frequencies	800, 1700, 1900, 2100	800, 1900, 2100	N/A
GSM Spec compliance	R4	R99	R99

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GPRS Multi-slot	Class 12	Class 10	Class 12
EDGE Multi-slot	Class 12	Class 10	Class 10
GSM Frequencies	800, 900, 1800, 1900	800, 900, 1800, 1900	800, 1800, 900 or 1900
Max DL speed	7.2 Mbps	3.6 Mbps	236 Kbps
Max UL speed	2.0 Mbps	384 Kbps	118 Kbps

Q: What is the difference between HSDPA and HSUPA?

A: HSDPA is an acronym for the first generation after UMTS technology that means the downlink is optimized. HSUPA means the uplink has also been optimized, along with an even better optimization of the downlink. Downlinks and uplinks are asymmetrical, meaning they operate at different speeds. Since most computers download far more than they upload, the system is geared toward faster downlinks. Applications that rely on uploading a lot of data benefit greatly from HSUPA technology. CN50 will be the only rugged device offering this technology for at least the first 12 – 18 months it is released.

Q: The CN50 is listed as having 3.75 WWAN technology. Is this better than 3G or 3.5G?

A: In the GSM world, UMTS has traditionally been classified as 3G. High Speed Downlink Packet Access (HSDPA) increased the speed from basic UMTS so it was classified as 3.5G.

The next advancement in the technology was High Speed Uplink Packet Access (HSUPA) which increased the base speeds for uplink and downlink. HSUPA needed a differentiation from the basic HSDPA so 3.75G was adopted as it is an advancement of the 3G UMTS technologies, but it isn't considered a 4G technology.

The simplest answer to this question is that HSUPA is an enhancement of HSDPA and UMTS and is considered in the industry as a 3.75G technology. It improves upon both the uplink and downlink speeds of HSDPA which is known as 3.5G technology.

Section III: Wireless Local Area Network Radio

Q: Does the CN50 support wireless local area networking (WLAN)?

A: Yes, it included a wireless LAN radio that supports the 802.11 b/g standards.

Q: If CN50 is primarily intended to target in-field applications, then how will the WLAN radio most likely be utilized?

A: The primary communications mechanism will be via the advanced 3G cellular radio. The Wi-Fi radio is provided to facilitate large file transfers or batch downloads while in a settlement room or repair depot, as an alternative to the Ethernet wired connectivity on the CN50 multi-dock. This helps workers be more productive by reducing the wait for downloads, and potentially lowers their total cost of ownership by minimizing large data transactions on the public WWAN networks.

As such, the Wi-Fi radio will likely be used mostly at the beginning of the end of shift. At the beginning of the shift, the Wi-Fi radio will be used to download the day's assignments and document updates. At the end of the shift, locally-stored information will be uploaded to the enterprise. Major system updates and other large data transfers will also be handled at this time. In most of these scenarios, the CN50 will likely be docked in place or within a single location. Wi-Fi on board also enables the worker to connect to higher speed, potentially free or lower cost WLAN connection during the workday for bulk data transfers (e.g. Stop at a McDonald's or Starbucks and send in your orders for a portion of the day.)

Q: Is the CN50 Wi-Fi® Certified?

A: Yes, the CN50 is Wi-Fi certified for 802.11b, 802.11g, WPA™, WPA2™, EAP-TLS and PEAPv0/EAP-MSCHAPv2.

Q: Is Wi-Fi certification in conflict with Cisco CCX certification?

A: No. In fact, Wi-Fi compliance is at the core of the Cisco Compatible Extension Program. Older CCX features are often included in newer Wi-Fi certification programs. In those cases, the feature is removed from CCX testing and CCX simply requires certification to the appropriate Wi-Fi standard.

Q: Why didn't Intermec submit the CN50 for CCX certification?

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A: Based on the dominant use of the CN50 for wide area wireless applications, and batch oriented use of WLAN access, we opted to implement an 802.11 b/g radio with industry standard Wi-Fi compliance in order to focus on the flexibility and radio optimization for wide area connectivity. CCX provides exceptional value for more demanding applications, but for the CN50 usage scenarios, the primary benefits of CCX certification, such as fast roaming, network coverage reporting and advanced security, are not applicable.

Q: What authentication methods does the CN50 support?

A: The CN50 supports open (no authentication), shared key (WEP) and 802.1x. The 802.1x methods supported are EAP-TLS and PEAPv0/EAP-MSCHAPv2.

Q: What data encryption options does the CN50 support on the WLAN?

A: The CN50 supports the “no encryption” option, WEP, AES and TKIP.

Q: Does the CN50 support inter-access point roaming (on the same network)?

A: Yes. The Wi-Fi certification tests verify that the inter-access point roaming is supported using network infrastructures from a variety of vendors. The test networks include both autonomous access points and controller-based networks.

Q: What networks or access points has Intermec tested with the CN50?

A: The CN50 should work well with any Wi-Fi certified wireless network equipment. Intermec has tested WLAN networks using infrastructure components from Cisco (both autonomous access points and controller-based networks), Aruba and Meru.

Q: Does the CN50 support inter-network roaming?

A: “Intra-network roaming” can mean a couple of different things. It can refer to roaming from one subnet to another on the same physical transport- for example, from one WLAN to another WLAN. It can also mean roaming between networks on different physical transport layers – for example, roaming from the Wi-Fi network to the cellular network. Both scenarios require software or network support that is not inherent to the CN50. Roaming from one WLAN to another WLAN may be possible if this capability is provided by the WLAN management software. Roaming from the Wi-Fi network to the cellular network requires software currently not supported on the CN50. This means that roaming from the Wi-Fi network to the cellular network will require terminating the session on the Wi-Fi network and establishing a new session on the cellular network.

Section IV: Camera, imager and eMDI

Q: Which integrated scanner options are available in the CN50?

A: The new imager (EA21) has 3X more pixels than the existing EA11. The CN50 includes a dedicated DSP for analyzing the image data. This new architecture provides more snappy reading of 1D and 2D bar codes and enables the imager to support electronic mobile document imaging.

Q: Does the CN50 offer both an imager and a camera?

A: Yes, the CN50 offers the new Intermec EA21, the latest highly advanced imager in the Intermec scanning arsenal, in addition to a 3.1 megapixel color camera with autofocus and flash photograph capability.

Q: Will the CN50 have a built-in flash?

A: Yes. This will allow the camera to record photos in lower light levels.

Q: What is eMDI and how will it be different? Does eMDI support OCR?

A: eMDI (enhanced Mobile Document Imaging) is a method of capturing full-size document images with mobile computers. There have been claims of other document imaging solutions in mobile computers, but eMDI is the first method to take out the complexity and make entering documents into a mobile computer almost foolproof.

This optional software application on the CN50 mobile computer will capture the image of a document, straighten the edges, remove any key-stoning, and sharpen and straighten the image to be entered into document management systems. Images output from this system can be sent to document management systems to be processed immediately or retrieved later when needed. For applications substantially smaller than full-page, images can possibly be sent to OCR (optical character recognition) systems for conversion to

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text records. However, the first release of eMDI for use with full-page documents is only designed for human readable applications and is not recommended for OCR or applications that require the extraction of embedded barcodes

Q: If the CN50 imager will take clearer pictures of documents than the camera, why do we need the camera?

A: There is a clear distinction between “document photography” and “document imaging.” It is very difficult to consistently capture documents with a camera by using the typical view finder and other controls on a mobile device.

Consistent document capture requires image correction software to compensate for the numerous variations found in a mobile environment such as the “keystone” effect, lighting conditions, and aiming.

The CN50 document capture feature includes a laser framer to greatly improve ease of use and image consistency. Also, unlike a camera, the CN50 mobile document imaging application produces images that are in a format that can be easily accepted by document management systems.

The camera can be used in situations such as taking pictures of damaged freight or other situations that require a higher resolution color image than what can be produced by an imager.

The imager is used instead of the camera for document capture for several reasons:

- An imager removes the need for user expertise and provides a point-and-click user experience. The user simply frames the document using a laser framer (instead of viewing the document first) and clicks -- a good beep indicates that the image has been captured.
- There is no need to focus a camera or preview the image.
- The imager can capture documents in a TIFF format, which is the universal format used by document management systems. This simplifies the process of getting the image from the device into a document management system because file translation is not required on the back end.
- Post-processing provides image clarification such as key-stoning and enhancement that cannot be performed by a camera.

Q: Unless I have a printer, how will I know that I’ve got good image visibility when I take an image of a document?

A: The laser framer provides the parameters for good document capture. If the document is within the framer, you should have a good image. The Intermec software gives the user the opportunity to review a document that has been captured to check image quality. However, if you’re working in a known environment, there is no need to check each image individually. You can zoom in/out to see various portions of the document.

Q: When imaging a document, how do I know when the imager is focused?

A: The imager projects four red corners called a laser framer. You can line up the laser framer with the document by zooming in or out towards the document. The document is focused and ready for imaging once the four corners are in alignment with the four corners of the document.

Q: What IP protection will we have against others simply copying our imaging implementation?

A: We do have IP protection in the form of patent applications and trade secrets. Intermec has been doing image processing for many years and has built up substantial IP. We have a dedicated and seasoned group of engineers located in Toulouse, France that support this technology. It would be very hard to copy our implementation without the experience and knowledge of imaging that we have.

Section V: Software

Q: Will any software be tested or verified to work on the CN50 platform prior to release?

A: We have an aggressive partner program that has been implemented for the CN50 launch. Details of the specific products that have passed validation and any promotions around those products will be announced at launch date.

Q: What device management options are supported by the CN50 out of the box?

A: At product launch, the first device management option will include SmartSystems Foundation remote console support for initial device configuration and provisioning. SmartSystems is adding new tools to make initial connection and configuration out of the box easier than ever.

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Product offerings including System Center Mobile Device Manager from Microsoft and MobiControl from SOTI will be tested and available at product launch. Skynax from GATC is offered as the recommended data and device management package to support field mobility applications. Support for Wavelink Avalanche and other partner offers not specifically aimed at in-field mobility applications will be added as they are validated and tested.

Q: Will carrier-based Push to Talk (PTT) be supported on either device?

A: No, the CN50 will support software-based Push to Talk instead. The market perception about carrier PTT is that it is too restrictive; they can only talk to devices on that carrier network. Software-based PTT allows mobile workers to carry on voice conversations with other workers on desktop machines, vehicle-mounted devices, and even some brands of mobile phones. It also allows workers using different carrier networks, 802.11 WLANs, and even computers connected via wired Ethernet to communicate via voice.

Section VI: Peripherals and Accessories

Q: What accessories are available for the CN50?

A desktop adapter is available which charges the CN50 and has a USB port that allows a USB-to-PC cable connection. A 4-slot docking station is available to provide charging for up to four computers at a time; this is available with or without Ethernet connectivity. A 4-bay charger is available to simultaneously charge up to four CN50 battery packs. A vehicle holder, vehicle power adapter, and belt holster are also available.

Q: Will the CN50 accessories offer any cover or holster?

Yes, there will be a holster available at PQA.

Q: What are the mounting options for the CN50?

The CN50 offers a vehicle mounting bracket. An additional accessory clip can be used to convert the mounting bracket to a battery-charging vehicle bracket. Photos are available in the launch kit PowerPoint presentation.

Q: Will RFID be available for the CN50?

A: No, RFID peripherals will not be available for the CN50 at product launch, nor are there plans for a version of the IP30 that works with the CN50.

Q: What are the plans to support a 6822 printer "holder" for the CN50?

A: There are currently no plans to produce a specific holder for the 6822 printer. Most 6822s are permanently mounted in vehicles, and we recommend that you simply mount a CN50 using a separate vehicle dock and charger, and communicate with Bluetooth.

Q: Does the CN50 include a battery?

A: No, there are two battery options for the CN50. By selecting and ordering the battery of their choice, customers are able to avoid disposing of batteries they don't want, which will reduce the amount of waste and disposal of battery materials into landfills and waste collection and management systems.

What is the current battery technology? How long does it last? What is the recharge time for these batteries? The CN50 uses lithium-ion (Li-ion) batteries (standard and extended). The standard battery provides "light-duty" service for 8 hours. The extended battery has two times that capacity and provides "heavy duty" service for a 12-hour shift. The recharge time is approximately 4 hours. More detailed battery usage profiles will be provided as soon as they are available.

Q: I heard that the batteries in the CN50 are IEEE 1725 certified. What does this mean?

A: CN50 batteries are compliant with the standard set by IEEE 1725. This standard establishes criteria for design analysis for quality and for reliability and safety of rechargeable Li-ion and Li-ion polymer batteries for mobile telephone applications. Also included in the IEEE standard are battery pack electrical and mechanical construction, packaging technologies, pack and cell level charge and discharge controls, and overall system considerations.

Section VII: Other Features and Specifications

Q: Can the "screen rotation"/accelerometer be disabled so user apps are locked into a particular orientation?

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A: Yes, it can be turned off easily. To do this, go into Settings, find an application called Sensors, and select "Enable All."

Q: Was the CN50 designed with the ability to have it "easily" pass for Class 1 Division 2 hazardous certification ratings should a customer want to pay for such certification or future demand warrant us doing this internally?

A: The CN50 was not designed to serve situations requiring hazardous certifications and will not be modified to support them.

Q: What is the chipset for the CN50?

A: The CN50 is based on the Qualcomm MSM7600 chipset. This chipset contains both ARM 9 and ARM 11 processors, which provide high performance architecture to support general purpose computing in addition to radio functionality.

Q: Are there any other devices on the market that use this chipset and architecture?

A: It has been reported that HTC Corporation has an upcoming product called the Whitestone that is based on the same chipset and architecture.

Q: What can you tell me about the processors used in the CN50?

A: There are actually 4 processors used in the CN50: two ARM processors and two Digital Signal Processors (DSPs). Comparing a single PXA processor to four dedicated processors is like comparing apples and oranges – unless you have a very specific task or application.

Both ARM processors (ARM 9 and ARM 11) work at 528 MHz. One of the DSPs and the ARM 9 processor are dedicated to the radio. For the most part, this is invisible to the customer. The other DSP is dedicated to the scanner/imager. It is only powered when scanning bar codes or doing document imaging.

The ARM 11 is the main processor that runs the customer applications and is dedicated to Windows and User Interface. Since it is dedicated (not running radios or scanners), the overall performance is expected to be similar or slightly better than the CN3. Performance is situational, but benchmarks will be published to characterize processing performance.

Battery life will benefit from using multiple processors. The CN50 optimizes power consumption by shutting down processors not in use.