

**Lucent Technologies**  
Bell Labs Innovations



**DEFINITY<sup>®</sup> ECS Interface for the**  
DEFINITY Wireless Business System

555-232-108  
Comcode 108478405  
Issue 5  
June 1999

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This document was prepared by the BCS Product Publications group, Lucent Technologies  
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## About This Book

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### **Introduction**

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This guide contains information regarding the relationship and interactions between the DEFINITY<sup>®</sup> Wireless Business System (DWBS) and the DEFINITY Enterprise Communications Server<sup>®</sup> (ECS). The guide serves as both a reference and an administration tool.

### **Audience**

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This guide can be used by various personnel, including system configurators, system administrators, service technicians, telecommunications managers, and trainers.

## **Electromagnetic Compatibility Warning**

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### **Important Safety Guidelines for Users**

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For safe and efficient operation of your DWBS 9601, 9601+, or 9630 Series WT, observe these guidelines.

Your Wireless Terminal is a radio transmitter and receiver. When the battery is installed, the WT is on and it receives and also sends out radio frequency (RF) energy. The WT operates in the frequency range of 1920 to 1930 MHz. Your handheld WT uses the digital Time Division Multiple Access (TDMA) mode; the power is transmitted in bursts at a 100 Hz pulsed repetition rate. The peak envelope transmit power is 100 mW or less.

### **Exposure to Radio Frequency Energy**

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The design of your WT complies with the latest safety levels from the Institute of Electrical and Electronic Engineers (IEEE) and the American National Standards Institute (ANSI) with respect to human exposure to RF energy. Of course, if you would like to limit RF exposure even further, you may choose to control the duration of your calls.

### **Cardiac Pacemakers**

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The Health Industry Manufacturers Association recommends that a minimum separation distance of six inches be maintained between a handheld WT and a pacemaker to avoid potential interference with a pacemaker. These recommendations are consistent with the independent research by and recommendations of wireless technology research.

- Always keep the WT more than six inches from the pacemaker whenever the battery is in the WT.
- Do not carry the WT in a breast pocket.
- Use the ear opposite the pacemaker to minimize the potential for interference.
- If you have any reason to suspect that interference is taking place, take the battery out of your WT immediately.

## Hearing Aid Compatibility

Most electronic equipment, such as equipment in hospitals, is shielded from RF energy. However, RF energy from wireless telephones may affect some electronic equipment.

Although the DWBS 9601 WT and 9630 Series WT are compatible with inductively coupled hearing aids, you should consult your physician or hearing aid manufacturer to determine if your hearing aid is adequately shielded from external RF energy. The operation of inadequately shielded medical devices may be adversely affected when a portable wireless telephone is operating in close proximity.

## Organization

This document contains the following chapters:

- **Chapter 1, “System Description and Components,”** discusses the DEFINITY ECS components that are required within the DWBS. This chapter also indicates the differences between the pocket phones available within the DWBS and the DEFINITY ECS wired phones.
- **Chapter 2, “Feature Descriptions,”** discusses DEFINITY ECS voice management features that are supported by but that function differently within the DWBS. The chapter also discusses features that are not supported by the DWBS as well as those features that should be turned off to ensure proper functioning of the DWBS.
- **Chapter 3, “Operations,”** discusses DWBS operations vis-a-vis the DEFINITY ECS.
- **Chapter 4, “*Guide Builder*<sup>™</sup> Software for the DWBS,”** discusses using software to create a customized DWBS guide.

 **NOTE:**

This information will be provided in a future issue of this document.

- **Chapter 5, “Administration,”** explains how to use DEFINITY ECS administration functions to administer DWBS components.
- **Chapter 6, “Maintenance,”** explains how to use the DEFINITY ECS maintenance model to test and determine the status of DWBS components.
- **Chapter 7, “Traffic Measurements,”** discusses generating and using traffic and performance reports to help analyze problems within the DWBS and to provide data for growth planning.

This document also has a glossary and an index.

## **Related Information**

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Use this document in conjunction with the following documents:

- *DEFINITY Wireless Business System Site Planning, 555-232-601*
- *DEFINITY Wireless Business System Installation and Test, 555-232-102*
- *DEFINITY Wireless Business System Maintenance, 555-232-103*
- *DEFINITY Wireless Business System 9601 Wireless Terminal Quick Reference, 555-232-104*
- *DEFINITY Wireless Business System 9601 Wireless Terminal User's Guide, 555-232-105*
- *DEFINITY Wireless Business System 9630 Series Wireless Terminal Quick Reference, 555-232-702*
- *DEFINITY Wireless Business System 9630 Series Wireless Terminal User's Guide, 555-232-701*

## Typographic Conventions

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Several conventions are used to convey information quickly. These conventions are as follows:

- This *typeface* is used for references to titles of other documents and when referring to fields on screens.
- This **typeface** is used to identify commands and values for fields within screens.
- The following icon

### **WARNING:**

emphasizes information that is important to your safety.

- The following icon

### **CAUTION:**

indicates information you need to prevent equipment damage.

- The following icon

### **NOTE:**

identifies additional information pertinent to the text preceding it.

## Getting Help

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If you have any questions regarding the information in this book, call technical support at (800) 248-1234.



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# System Description and Components

# 1

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## **Introduction**

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This chapter discusses the DEFINITY Enterprise Communications Server (ECS) Release 7 components that are required within the DEFINITY Wireless Business System (DWBS). Where appropriate, the chapter also explains how the system interfaces with these components, and it discusses the system capabilities corresponding to these components. First, however, a discussion of the WTs available within the DWBS is provided.

## **9601 and 9601+ WTs**

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The 9601 and 9601+ WTs are portable multiple-call appearance wireless voice terminals with a 3-line by 16-character display. These are small and lightweight phones that do not have an external antenna. The phones contain three soft keys for a menu-item interface, three hard keys for display control, and three hard keys for call management.

Coupled with the DWBS, the 9601 and 9601+ WTs provide mobility to the user. This means that the user can place and receive calls on these WTs regardless of location as long as the WTs are within system range. As such, the user can provide a more timely handling of work-related matters and also manage the flow of information more effectively.

Like the 9601, the 9601+ is natively supported on the DEFINITY ECS. The 9601 provides two call appearances, and the 9601+ provides three call appearances.

For a complete description of the 9601 and 9601+ WTs and their functions, refer to the *DEFINITY Wireless Business System 9601 Wireless Terminal User's Guide*, 555-232-105.

## **9630 Series WT**

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The 9630 Series WT is a pocket-size, portable phone that provides wireless mobility as well as access to full business features and many DEFINITY ECS features.

The industrial design of the 9630 Series WT is identical to that of the TransTalk™ 9031 WT (including no flip). The functionality of the 9630 Series WT is similar to that of the DWBS 9601 WT. The 9630 Series WT is intended for the following markets: manufacturing, distribution, retail, and non-office personnel in healthcare and other markets.

The WT provides multiple call appearances and a 5-line by 16-character liquid crystal display (LCD) that supports your business communication needs. The top line of the display is reserved for displaying icons indicating the following: message waiting, signal strength, lock, vibrator, battery, silent, mute, and next. The other four lines are reserved for alphanumeric characters.

The 9630 Series WT contains the following hard keys (buttons) on the front: On/Off, Redial, Menu, Next, Silent, Conf, Trans, and Hold; it also contains a Mute button on the side. In addition, the WT contains a dial pad and four soft key buttons.

The 9630 Series WT is not physically connected by a cord to the DEFINITY ECS or any other DWBS component. Instead, the WT is wireless and communicates via a radio link to a network of Wireless Fixed Bases (WFBs), which in turn connect the WT to the DEFINITY ECS. The 9630 Series WT is designed to be compatible with future releases of the DWBS.

The 9630 Series WT is not natively supported on the DEFINITY ECS. This WT is administered as an alias of either the 9601 or 9601+.

For a complete description of the 9630 Series WT and its functions, refer to the *DEFINITY Wireless Business System 9630 Series Wireless Terminal User's Guide*, 555-232-701.

## **Software Environment**

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The DWBS is provisioned as a customer option on the DEFINITY ECS Release 7 common software base.

## **Terminals and Trunks**

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The DWBS supports all the wired voice terminals supported by the DEFINITY ECS. DWBS WTs can make or receive calls over any trunk type supported by the DEFINITY ECS.

## **Cabinets and Configurations**

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The DWBS is available on current DEFINITY ECS cabinets, including:

- Compact Single-Carrier Cabinet (CSCC)
- Compact Modular Cabinet (CMC)
- Enhanced Single-Carrier Cabinet (ESCC)
- Single-Carrier Cabinet (SCC)
- Multi-carrier Cabinet (MCC)

The system also supports all the reliability options, including standard, high, and critical.

## Circuit Packs and Cards

The following list identifies and discusses the required circuit packs and cards:

- **Radio Controller (RC) circuit pack (TN789)**—connects WFBs to the DEFINITY ECS cabinet. This circuit pack can be located in any universal port slot in any DEFINITY ECS port carrier except (currently) a DS1-remote Expansion Port Network. To ensure a seamless handover of active calls, RC circuit packs must be located within a single port network. The RC circuit pack follows DEFINITY ECS standards for numbering and labeling as a port (service) circuit pack, and it has a purple label.

The RC circuit pack is not a typical circuit pack because its ports are not directly assigned to specific WTs. However, since the circuit pack is not restricted to specific port slots, it is labeled like a service circuit pack.

- **Tone-Clock circuit pack (TN780, TN768, TN2182)**—provides the system clock used by the fixed-part radio components to synchronize the system. The circuit pack must have a stability of at least 10 ppm to satisfy the required air interface. Therefore, the TN756 Tone Detector/Generator circuit pack cannot be used for this purpose. If this circuit pack is in the system, it must be replaced by either a TN2182 Tone Detector/Generator circuit pack or a Tone-Clock (TN780 or TN768) circuit pack and a TN748 Tone Detector circuit pack.
- **Call Classifier circuit pack (TN744C)**—One or more of these circuit packs may be added, depending on the number of users. The WT requires this circuit pack during the dialing phase. The number of ports should be engineered according to the expected traffic load.

## Capacities

The following table indicates the maximum number of various DWBS components according to the DEFINITY ECS.

**Table 1-1. Component Capacities**

Component	DEFINITY ECS R7 or Greater Capacities
9601 (+) and/or 9630 Series WTs	1500
Radio Controllers (RCs)	30
Wireless Fixed Bases (WFBs)	60
Cell Antenna Units (CAUs)	240



**NOTE:**

WFBs and CAUs are discussed in the DWBS Installation and Test document.

Each fully configured RC circuit pack can support up to 24 simultaneous wireless connections. All DEFINITY ECS versions support 30 RC circuit packs. For each RC circuit pack, a maximum of two WFBs is allowed. For each WFB, a maximum of four CAUs is allowed. Finally, the maximum distance between the RC circuit pack and the WFB is 5,000 feet.

## **System Coverage Areas**

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The following table indicates a typical coverage area for systems in an area-constrained configuration according to several CAU/WFB setups and the DEFINITY ECS. These areas assume 10,000 square feet per WFB for a single CAU and 40,000 square feet per WFB with four CAUs, along with the number of WFBs per switch as defined in the table in the previous section.

**Table 1-2. System Coverage Areas (Area-Constrained Configuration)**

<b>CAU/WFB Setup</b>	<b>DEFINITY ECS R7 or Greater</b>
	<b>Coverage Area</b>
One CAU per WFB	200,000 sq. ft.
Four CAUs per WFB	800,000 sq. ft.



**NOTE:**

Coverage area depends on many factors, including building layout and construction materials.

## **WFB Power**

---

Power to the WFB may be provided by the RC circuit pack. This circuit pack has the same reserve power standby as the DEFINITY ECS. Auxiliary power is required for WFBs with CAUs or if the distance between the RC circuit pack and the WFB (or, accordingly, the length of the Category 3 4-pair twisted cable) is more than 1,000 feet long.

The following figure illustrates the DWBS.

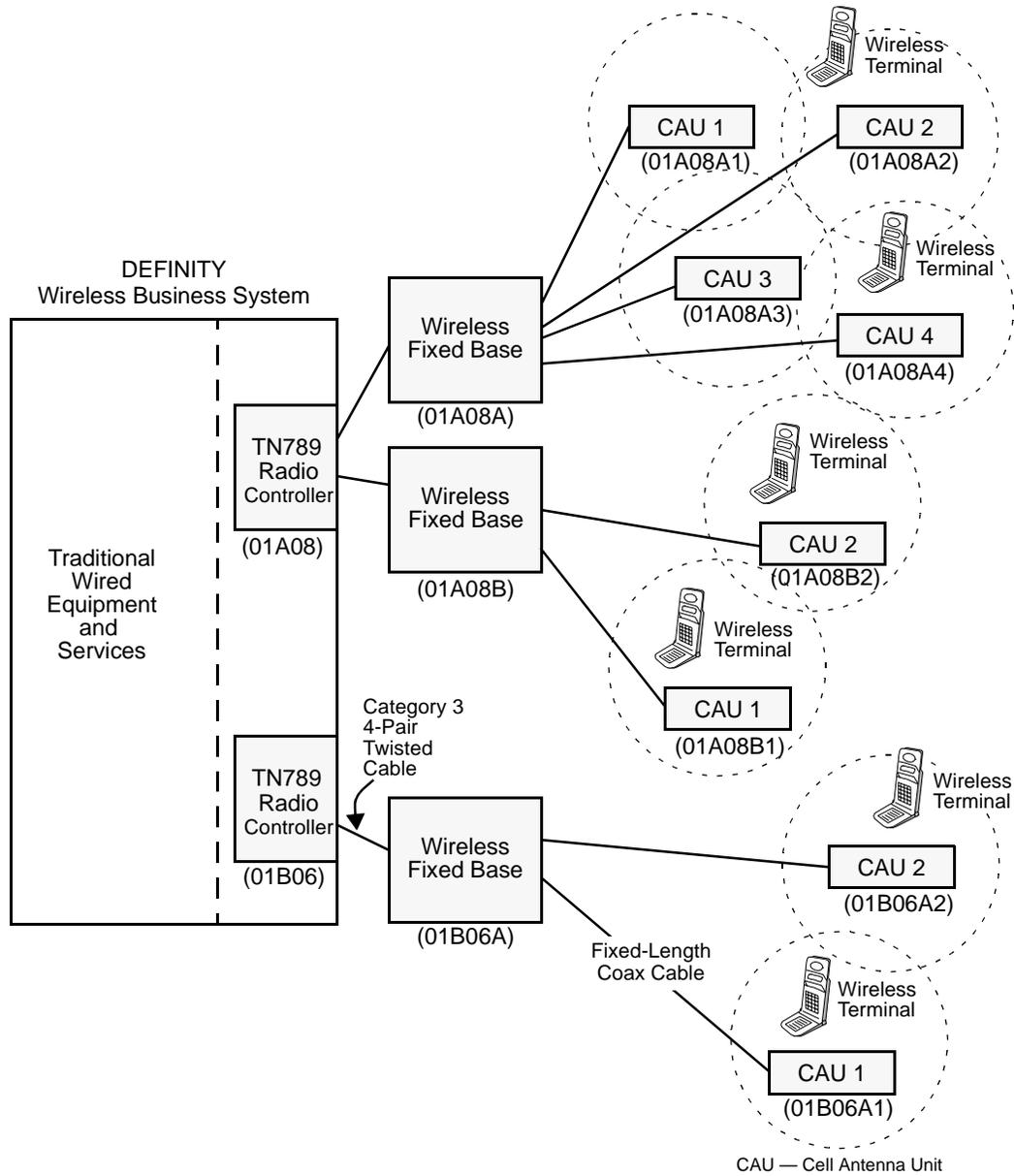


Figure 1-1. DEFINITY Wireless Business System

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## Feature Descriptions

# 2

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### Introduction

The DEFINITY Wireless Business System (DWBS) allows the user of a 9601, 9601+, or 9630 Series WT to access all DEFINITY ECS features available to a digital voice terminal via Feature Access Codes (FACs). It also allows access to any display features available to a wired digital station, as long as these features do not require administered buttons. FACs are available to all DEFINITY ECS phones.

As for any Digital Communications Protocol (DCP) station, users calling a WT immediately listen to a ringback tone while the WT is being paged. If the WT has no call coverage assigned, and if it cannot be reached because it is not within the system coverage area and due to wireless resource exhaustion conditions, the caller continues to listen to a ringback tone. If call coverage is assigned, the call goes to coverage according to the administered coverage criteria.

The first part of this chapter discusses the unique characteristics of the 9601, 9601+, and 9630 Series WTs from a system perspective, including features and processes. The second part of the chapter discusses DEFINITY ECS features that behave differently whenever they are interacting with the DWBS. Accordingly, each feature description includes the appropriate commentary in this regard. Finally, this chapter also discusses DEFINITY voice management features that are not supported by the DWBS, and it discusses recommended administration options.

## **Unique Characteristics of the DWBS Wireless Terminals**

---

Currently, the DWBS includes the 9601, 9601+, and 9630 Series WTs. From a system perspective, the 9601+ and the 9630 Series WTs are aliased versions of the 9601 WT. However, whereas the 9601 and 9601+ use soft keys to enable certain features and functions (for example, conferencing or transferring calls), the 9630 Series WT uses hard keys for this purpose.

The following list identifies and comments on the unique characteristics of the DWBS WTs.

- **Buttonless Feature Activation**

The WT does not have a feature button. However, you can access features by using FACs in conjunction with the keys for the “conference” and “transfer” features. Among the features that you can access via this method is Automatic Callback (ACB), Leave Word Calling (LWC), and Call Park/Answer Back. For example, to access LWC from a DWBS WT that is active on a call, enable the “conference” or “transfer” feature to obtain dial tone; then enter the FAC for LWC. Finally, enable “conference” or “transfer” again to complete the operation.

- **Deep Sleep Mode**

The WT enters this mode whenever it repeatedly tries to access the system and fails to do so due to out-of-range conditions. This mode allows the WT to conserve battery power. Each deep sleep mode period lasts for approximately three minutes. Thereafter, the WT “wakes up” after a moment to retry system access. If access is not gained, the WT reenters deep sleep mode. Therefore, during deep sleep mode, the system may temporarily fail to deliver incoming calls or indicator updates even when the WT is currently being walked into system range.

The user can force the WT to exit this mode by pressing any of the buttons on the WT.

- **Hot Battery Replacement**

The system maintains a WT’s call(s) for 60 seconds whenever the WT’s battery is being swapped. After the battery is replaced, the system automatically reconnects the call(s).

- **Incoming Call Delivery**

Whenever a WT is called, the system must locate and establish a connection to the WT before the system can ring the WT. This process usually takes about two seconds to complete. However, if the WT is in a busy system or bad coverage area, this process may take up to approximately 10 seconds (during which time the calling party hears a ringback tone). Therefore, it may be necessary to increase the “don’t answer” interval assigned to the switch’s WT’s coverage path so that the call does not go to the WT’s coverage point prematurely.

■ **System-Wide Mobility**

System-wide mobility is provided within the same port network as well as across port networks.

If a user is active on a call and stays within one port network, the user can roam freely across a maximum of 10 RC coverage areas within that port network. This is possible due to a seamless call handover capability.

RCs in multiple port networks should be RF-isolated from each other. Once a call is established within a port network, the user must remain within the coverage area of that port network to stay on the call.

You can put a call on hold by parking the call. To park a call on a DWBS WT, enable “transfer” and dial the Call Park FAC; then enable “transfer” again. To reconnect to the same call, dial the Answer Back FAC followed by “#.”

■ **Location Registration**



**NOTE:**

This is not a user-observable feature.

This process allows the WT to report its location within the system. Whenever a WT enters system coverage, the WT automatically selects an RC circuit pack with the strongest signal strength and then registers to it. As the WT moves through the system, the WT continuously monitors the signal strength of the neighboring RC circuit packs. If the signal strength of another such RC circuit pack becomes the “strongest,” the WT may register with this circuit pack.

■ **Mobility States**

WTs within the DWBS are always in a specified *mobility state*. The mobility state of a WT is indicated in the *Mobility State* field of the Status Station report. (Refer to Chapter 6.) The following list identifies and discusses several of these mobility states:

— ***in-system***

The WT is location-registered to an RC. Whenever a WT has this mobility state, the WT’s service state can either be “off-hook” or “on-hook,” as indicated in the Status Station form.

— ***out-of-system***

A WT assumes this mobility state under any one of the following conditions:

- WT has been administered, but it has not yet obtained access to the system.
- Incoming call has been offered to the WT, but the WT has not responded to subsequent paging requests.
- RC circuit pack to which the WT is location-registered is taken out of service.

Whenever a WT assumes this mobility state, the WT's service state is always "disconnected," as indicated in the Status Station form.

- **No Off-Hook Idle State**

If a wired phone is in the off-hook idle state, the phone is off-hook and not actively involved in a call (for example, the other party on the call ends the call, leaving the phone off-hook but idle; or a call is being held at a station that is off-hook). Because it does not have a physical switch hook, the WT does not support this state. Accordingly, the WT is forced on-hook by the DWBS whenever the WT is not active on a call. Also, the WT does not support features that require a station to be in the off-hook idle state (for example, Auto-Answer or Service Observing).

- **No Switch Hook**

DWBS WTs do not have a physical switch hook. To go off-hook on a 9601 WT, press **[Call]** or a call appearance soft key; to go on-hook on a 9601 WT, press **[End]**. To go off-hook on a 9630 Series WT, press **[On/Off]** or a call appearance soft key; to go on-hook on a 9630 Series WT, press **[On/Off]**.

- **Preorigination Dialing**

Pre-origination dialing allows you to dial a call before you receive dial tone. To use this option on a 9601 WT, first dial a number and then press **[Call]**. To use this option on a 9630 Series WT, first dial a number and then press either any call appearance soft key, if available, or **[On/Off]**.

**⇒ NOTE:**

You cannot use pre-origination dialing whenever the WT has an active call that is not on hold, an alerting call, or no idle call appearances. You can use pre-origination dialing for an active call that is on hold.

- **Wireless Resources**

For a WT to access the system, wireless resources, such as a radio channel and radio circuit hardware, must be allocated. These resources can be highly contended within a "busy" system. In such a case, the WT displays a failure message as a call is being made. Similarly, when an incoming call is being delivered to a WT that cannot access wireless resources, the calling party experiences a "don't answer" situation.

- **Alerting Patterns**

Besides the eight conventional ringing patterns available within the DEFINITY ECS, the 9630 Series WT provides a ringing pattern that sounds like a pager. This capability is local to the 9630 Series WT.

## **Supported Features with a Variation in Function**

---

This section discusses DEFINITY ECS features that are supported by the DWBS but function differently due to their interactions with the DWBS.

### **Attendant Direct Extension Selection with Busy Lamp Field**

---

The lamp of an out-of-system WT is always off. The lamp of an in-system WT is always on.

### **Attendant Override of Diversion Features**

---

With this feature activated, a failed page of a WT by the system does not cause a call from an attendant to follow the coverage path. Instead, the call remains at the called station, and ringback is provided indefinitely.

### **Attendant Priority Queue**

---

Calls involving WTs may be held in the attendant's priority queue. If such a WT leaves the system, or if the WT's link to the system is dropped, the WT is dropped from the call.

### **Attendant Serial Calling**

---

If a WT leaves the system while it is on a serial call, or if the WT's link to the system is dropped, the WT is dropped from the call.

### **Automatic Call Distribution Features**

---

Any Automatic Call Distribution (ACD) features that are available via FACs are available on the WT.

Also, the following points should be noted:

- ACD directs calls only to the primary extension; it does not direct calls to bridged appearances. Furthermore, if a bridged appearance is active, the primary extension is also considered active; therefore, in such a case, no calls are directed to the primary extension from the ACD group.
- Auto-Answer is not available on the WT; therefore, any WT user within an ACD group must go off-hook to answer incoming calls manually.
- Call is undelivered either due to a lack of wireless resources or because the ACD member WT is out of the system.

- Call Coverage or Redirection on No Answer is required to prevent the call from being left unanswered.

### **Automatic Callback, DCS Automatic Callback, and Ringback Queuing**

---

Automatic Callback (ACB) and Distributed Communications System (DCS) Automatic Callback allow internal users who placed a call to a busy or unanswered internal voice terminal to be called back automatically when the called voice terminal becomes available. If an outgoing call is placed and all trunks are busy, the call is placed into an ordered queue. Ringback Queuing automatically calls back the user when a trunk for the call becomes available. ACB, DCS Automatic Callback, and Ringback Queuing are available to the WT without an administered button.

A WT user can activate ACB by first enabling the “conference” or “transfer” feature and then dialing the appropriate auto-callback FAC. The system administrator does not need to program an ACB button for this to occur. Once the FAC is dialed, the switch gives the user a confirmation tone. Thereafter, the user must again enable “conference” or “transfer” to activate the auto-callback.

Whenever ACB is activated to a WT, the system originates the callback call if that WT disconnects from a call and the ACB request has not been canceled by the calling party or timer expiration.

Whenever ACB is activated by a WT and the callback call begins and finds that the activating WT cannot be reached (because it is out of the system or no wireless resources are available), the callback call is canceled. Finally, the callback call is also canceled whenever ACB is activated to a WT and the callback call begins and finds that the called WT cannot be reached.

**⇒ NOTE:**

Automatic Callback calls cannot originate from a bridged call appearance. (See the next section.)

## **Bridging with WTs**

---

In addition to conventional bridging applications, the Bridging with WTs feature is available. This feature is intended for users who have a WT as well as a wired phone; accordingly, it allows one telephone number to be assigned to both phone types. This allows both phones, for example, to ring on identical incoming calls or to initiate calls with the same calling number ID.

A maximum of one WT is allowed in a bridging group. A multifunction terminal may have one or more WT bridged call appearances. The WT may be administered only with one of the following setups:

- Two or three primary call appearances
- Two or three bridged call appearances of a multifunction principal
- One call appearance and one a-bridge of an analog principal

Bridging with WTs functions almost like standard DEFINITY ECS Bridging. (Therefore, refer to the appropriate DEFINITY ECS document for details on Bridging.) However, the following must be noted:

- Only the presence or absence of bridged calls is transmitted to the WT. Calls that are placed on hold or being conferenced in or transferred are not transmitted to the WT.
- The “OWN EXT” field on the WT soft key menu contains the extension for which the WT is administered; therefore, this may not be the extension at which incoming calls are being received.

### **⇒ NOTE:**

Be sure to refer to the other features in this chapter for a discussion of their interaction with WT Bridging.

## **Busy Verification of Terminals and Trunks**

---

Whenever the “verify” button of a wired phone is pressed and the extension of an out-of-system WT is dialed, the user hears a reorder tone.

## **Call Appearances**

---

The DWBS WTs support multiple call appearances.

## **Call Coverage**

---

Calls to an out-of-system WT are redirected to coverage immediately. Also, ringing calls that fail paging or for which a wireless resource is not available are redirected to coverage according to the administered coverage criteria.

### **Call Forwarding All Calls**

---

An out-of-system WT does not affect its forwarding status. Therefore, calls placed to an out-of-system WT are forwarded to the destination station. If an out-of-system WT is the destination station for a call, the call follows the coverage criteria for the WT.

### **Call Vectoring/Call Prompting**

---

Whenever a call is redirected to a call vector that executes a vector step to route the call to an out-of-system WT, the effect is as if the WT does not answer the call. Vector steps that may be involved in such an operation include “route to digits” or “route to number.”

### **CallVisor Adjunct/Switch Application Interface**

---

Adjunct/Switch Application Interface (ASAI) adjuncts are allowed to monitor and, in some cases, control WTs. The following sections discuss specific restrictions that apply to WTs.

#### **Notification Capabilities Group**

ASAI adjuncts may request notification of splits containing WTs as members and of Vector Directory Numbers routing calls to WTs.

#### **Request Feature Capabilities Group**

If a WT is the selected party, all request feature capabilities are denied with cause value 63 (“service/option not available, unspecified”).

#### **Set Value Capabilities Group**

ASAI adjuncts can use this capability to set the state of a WT’s message waiting indicator.

#### **Third-Party Call Control Capabilities Group**

ASAI adjuncts may take control of calls involving WTs. However, third-party make call requests with a WT as the originator or destination are denied with cause value 63 (“service/option not available, unspecified”). Also, if a WT is the selected party, the following functions are denied with cause value 63: third-party selective drop, selective hold, reconnect, and merge.

#### **Third-Party Domain Control Capabilities Group**

ASAI adjuncts may request domain control of WTs and splits containing WTs as members. However, the following functions are denied with cause value 63: third-party answer, selective drop, selective hold, reconnect, merge, and WT

auto-dial requests. All other third-party domain control capabilities interact with the WT in the same way as a wired DCP terminal with no programmable feature buttons.

### **Value Query Capabilities Group**

ASAI adjuncts may request the following:

- ACD split query for splits with WTs as members
- ACD agent login query for splits with WTs as members
- ACD agent status query for WTs serving as ACD split agents
- Call queries for WTs
- Status station queries for WTs



**NOTE:**

DEFINITY ECS responds with the talk (idle/busy) state of the voice terminal.

- Extension query for a WT



**NOTE:**

DEFINITY ECS responds with an indication of “voice terminal” type.

- Party ID query for a call to find out the party IDs and extension of all parties (including WTs) on the call
- Station feature query to determine the current setting of the following functions for a WT: message waiting indication, Send All Calls, and call forwarding

### **Consult**

---

A consult call rings only the principal at the primary extension number; it does not ring the principal at any bridged appearance. Also, a consult call cannot be bridged onto by a bridged appearance.

### **Coverage Answer Group**

---

Bridged appearances are not rung whenever there is an incoming Coverage Answer Group (CAG) call. Also, bridged appearances cannot bridge onto CAG calls.

### **Facility Busy Indication**

---

An out-of-system WT appears as idle (that is, the “busy-ind” lamp is dark).

## **Hospitality**

---

A WT can activate the hospitality features via FACs for its own extension number. These features function regardless of whether the WT is in the system or out of the system. The WT can also receive these features if they are activated by another terminal.

Several points about Automatic Wakeup (AWU) should be noted:

- AWU calls to an out-of-system WT are indicated as **incompl** (event) and **busy** (reason) on the List Wakeup Station form.
- If an out-of-system WT registers with the system before a subsequent retry, the call is delivered to the WT.
- If a WT remains out of the system after the maximum number of retries, the AWU request is canceled.

## **Intercom (Automatic and Intercom) Dial**

---

The WT can receive, but cannot originate, Automatic Intercom and Dial Intercom calls. The WT supports the appropriate tones for Intercom calls. Also, DEFINITY ECS provides a ringback tone to a station that makes a dialed intercom call to an out-of-system WT.

Bridged appearances are not rung for intercom calls. Furthermore, if a station has no call appearances, it can never be rung for an intercom call.

## **Leave Word Calling and DCS LWC**

---

LWC and DCS LWC are available on the WT whenever the feature is activated via FACs before the desired extension number is dialed. These features can also be enabled via a transfer and FAC. In other words, the WT user can activate this feature by either dialing the LWC FAC before calling someone; or, after calling someone, by activating "conference" or "transfer" and then entering the LWC FAC.

## **Manual Signaling**

---

Whenever a wired station invokes manual signaling for an out-of-system WT, the station receives confirmation from the steady status lamp on the button.

## **Personal Central Office Line**

---

Bridged appearances are not rung whenever there is an incoming Personal Central Office Line (PCOL) call. Also, bridged appearances cannot bridge onto PCOL calls.

### **Redirection Notification**

---

This feature is not provided at stations with a bridged appearance.

### **Ringback Queuing**

---

A WT can activate or cancel Ringback Queuing toward a trunk group without an administered ACB button. Also, if either the WT is out of the system or no wireless resource is available, and if a ringback queuing callback call is delivered, Ringback Queuing is canceled.

Ringback Queuing can be activated only from a primary extension number; however, the ringback rings all appearances, and it may be answered from any of these appearances.

### **Send All Calls**

---

In a wireless bridging environment, activating Send All Calls from either the principal voice terminal or a WT with bridged call appearances sends calls to coverage with a ring ping sent to both the principal terminal and the WT.

### **Terminating Extension Group**

---

A WT can be administered in a Terminating Extension Group (TEG), and it can respond to a TEG call by answering the call with the call appearance on which the TEG call terminates. However, the WT cannot bridge onto a TEG call that is answered by one of the other TEG group members. Also, bridged appearances are not rung whenever there is a call to a TEG of which the primary extension is a member.

### **Voice Terminal Display**

---

The WT is provided with the same call-related display as a DCP phone. However, the WT has a much smaller display area than the DCP phone. As is true for most DEFINITY ECS display terminals, a WT's display may be administratively disabled.

## Unsupported Multifunction Station Features

---

The following list identifies the DEFINITY ECS multifunction station features that the WT does not support.

- Features that do the following:
  - Require the use of a button (except ACB and Ringback Queuing)
  - Support an off-hook idle state
- Service Observing
- Terminal Dial-up Testing (TDT)
- Terminal Translation Interface (TTI)

## Recommended Administration Options

---

This section discusses recommended administration options for the DWBS to ensure that the system functions properly.

### Off-Hook Alert

---

Off-Hook Alert (OHA) automatically activates emergency access to the attendant whenever a station is off-hook idle for an administrable period. This feature is turned on and off via the Class-of-Service form. It is recommended that OHA be turned off for all WTs within the DWBS; otherwise, WTs that go on-hook improperly will cause air channels to be locked if the administrable period is set too long, or if there is no attendant to take the “call.”

### Restrict Last Call Appearance

---

The default value **n** should not be changed for the *Restrict Last Call Appearance* field in the Station form. Value **y** restricts the WT from answering a second incoming call.

---

## **Operations**

# **3**

---

### **Introduction**

The DEFINITY Wireless Business System allows the user to make calls within a typical coverage area of 800,000 square feet and to access the DEFINITY ECS features. Users of wired stations or attendant consoles have full transparency when communicating with users of WTs.

## **System Functions and Characteristics**

---

### **Indicating System Relocation**

---

To meet the legal requirements of the Federal Communications Commission (FCC) and UTAM, Inc., the DWBS uses the DEFINITY ECS detection of power-up resets to indicate that the DWBS is possibly being relocated. Whenever the entire system is being relocated, the DEFINITY ECS detects power-up resets and keeps the system's radio fixed part from emitting radio signals until the system location can be verified by authorized personnel. Finally, WFBs and CAUs can be relocated within the customer premises where the system was originally installed.

**⇒ NOTE:**

The customer is required to have the minimum maintenance offering that provides Initialization and Administration System (INADS) support and activation in the event of a power loss.

### **Using INIT and INADS Logins**

---

An initialization (INIT) login must be used to enable the DWBS. Using this login type allows the user to access the Optional Features form, which contains a field for enabling the DWBS. (Refer to the "Administration" chapter.)

An INADS login allows the user to diagnose problems within and perform maintenance on the system.

---

***Guide Builder*<sup>TM</sup> Software for the  
DWBS**

**4**

---

The *Guide Builder* Software for the DWBS is a software application that is used to create a customized DWBS guide. This application will be available during a future DWBS release.



---

# Administration

# 5

---

## Introduction

Standard DEFINITY ECS administration is used to administer components for the DWBS. The standard **add**, **remove**, **change**, **display**, and **list** actions can be included in the commands relevant to these components.

This chapter discusses and presents the commands and forms required to administer DWBS components.

## General System Management

The Optional Features form contains a field for administering the DWBS. The form can be accessed by entering the **change system-parameters customer-options** command at the prompt.

An example of the form appears as follows:

```
change system parameters customer-options Page 1 of 4

                                OPTIONAL FEATURES

                                G3 Version: V6                Maximum Ports: 2400
                                Location: 1

Abbreviated Dialing Enhanced List? y                CAS Main? n
Access Security Gateway (ASG)? n                    Cvg Of Calls Redirected Off-net? n
Analog Trunk Incoming Call ID? n                    DCS (Basic)? n
A/D Grp/Sys List Dialing Start at 01? y            DCS Call Coverage? n
Answer Supervision by Call Classifier? y            DCS with Rerouting? n
ARS? y                                              DEFINITY Network Admin? n
ARS/AAR Partitioning? y                            DS1 MSP? y
                                                    Emergency Access to Attendant? y
ASAI Proprietary Adjunct Links? n                    Extended Cvg/Fwd Admin? n
                                                    External Device Alarm Admin? y
                                                    Flexible Billing? n
                                                    Forced Entry of Account Codes? y
ATMS? y                                            Global Call Classification? n
Audible Message Waiting? y                          Hospitality (Basic)? y
Authorization Codes: y                               Hospitality (G3V3 Enhancements)? y
CAS Branch? n

(NOTE: You must logoff & login to effect the permission changes.)
```

Figure 5-1. Optional Features Form (Page 1)

```

change system parameters customer-options                               Page 2 of 4
      OPTIONAL FEATURES
      ISDN-BRI Trunks? y      Restrict Call Forward Off Net? y
      ISDN-PRI? y            Secondary Data Module? y
                               Station and Trunk MSP? y
      Malicious Call Trace? y      Tenant Partitioning? n
      Mode Code Interface? n      Terminal Trans. Init. (TTI)? y
      Multifrequency Signaling? y  Time of Day Routing? y
      Multimedia Appl. Server Interface (MASI)? n  Uniform Dialing Plan? y
      Multimedia Call Handling (Basic)? n  Usage Allocation Enhancements? y
      Multimedia Call Handling (Enhanced)? n
      Personal Station Access (PSA)? y      Wideband Switching? n
                                               Wireless? y

      Processor and System MSP? y
      Private Networking? y

      (NOTE: You must logoff & login to effect the permission changes.)
  
```

**Figure 5-2. Optional Features Form (Page 2)**

Verify that the *G3 Version* field on page 1 of the Optional Features form contains **V5** or greater. The system will not operate on an earlier version.

The following list identifies and discusses other appropriate fields.

- *Wireless?*

Provides the user with access to all wireless switch services. Values include **y** and **n** (default).

**⇒ NOTE:**

This option is valid only if the *G3 Version* field is set to **V5** or greater. Also, this field can be changed only via the init login.

Once the *Wireless* option is enabled and the user has logged off and logged back in, the following wireless parameters on the switch are administrable.

- System-wide wireless parameters
- Carrier frequencies
- Radio Controller
- WT type
- Radio Controller TN code
- Firmware download servers

## **Administering System-Wide Wireless Parameters**

---

System-wide wireless parameter administration includes the following tasks:

- Defining a DWBS identification number
- Identifying which port networks will contain RC circuit packs
- Identifying specific carrier frequencies in the unlicensed part of the Emerging Technologies (ET) band (1920-1930 MHz) within which the system is allowed to transmit
- Defining the maximum number of RCs and WTs to be administered on the switch

The Wireless-Related System-Parameters form contains fields relevant to this information. The form can be accessed by entering the **change system-parameters wireless** command at the prompt.

An example of the form appears as follows:

```

change system-parameters wireless                                     Page 1 of 1

                                WIRELESS-RELATED SYSTEM PARAMETERS
                                System Identification: 0100015-2176

Maximum Radio Controllers: 9                                       Master Port Network: 5
Maximum Wireless Terminals: 22                                    Radio Transmission? y
                                                                UTAM Disablement? y

Allowable Carrier Frequencies (MHz)
1: 1920.625 y           5. 1925.625 y
2: 1921.875 y           6. 1926.875 y
3: 1923.125 y           7. 1928.125 y
4: 1924.375 y           8. 1929.375 y

Port Networks With Radio Controllers
1: y   6: n   11: n   16: n   21: n   26: n   31: n   36: n   41: n
2: y   7: n   12: n   17: n   22: n   27: n   32: n   37: n   42: n
3: y   8: n   13: n   18: n   23: n   28: n   33: n   38: n   43: n
4: n   9: n   14: n   19: n   24: n   29: n   34: n   39: n   44: n
5: n  10: n  15: n  20: n  25: n  30: n  35: n  40: n
    
```

**Figure 5-3. Wireless-Related System-Parameters Form**

The following list identifies and discusses the appropriate fields.

- *System Identification*

Provides the system with an identifier that it broadcasts regularly in its beacon or traffic-bearing channels. The system ID contains a fixed part and an administrable part. The fixed part is set by the system, and it is displayed as a read-only prefix to the administrable part. The administrable part contains a default value of **2176**.

- *Maximum Radio Controllers*

Indicates the maximum number of Radio Controllers allowed in the system. This number is based on the UTAM clearance for the site from the DWDT, and it should match the number of RCs designated in the DWDT package. **UTAM clearance from the DWDT and the DWDT package are required for DWBS activation in the United States.** Valid values for the field are from **0** to **50** inclusive.

**⇒ NOTE:**

The field determines the number of RCs that are added to the system via the **add radio-controller** command. The field does not limit the number of RC circuit packs that may be physically inserted into and recognized by the system .

This field can be changed only via the init login.

- *Master Port Network*

Provides a number identifying a port network that contains an RC circuit pack. Values for a G3si system include **01**, **02**, and **03**. Values for a G3r system include **01** through **44**. The default value is a blank field.



**NOTE:**

This field is displayed only for DEFINITY ECS G3i and DEFINITY ECS G3r configurations.

- *Radio Transmission*

Indicates whether the radio fixed part of the system should be enabled. Values include **y** and **n**. This field is defaulted to **y** whenever the *Wireless* option (field) on the Optional Features form is enabled. The field is defaulted to **n** whenever the *Wireless* option on the Optional Features form is disabled.

Whenever the value for this field is changed to **n**, the radio fixed part of the system is disabled.

Whenever the *Wireless* option of the Optional Features form is enabled and the switch is power-cycled, the *Radio Transmission* field value is changed to **n**, and the radio transmission on the switch is disabled. Radio transmission is restored once the *Radio Transmission* field is enabled.

A save translation system operation is done following a power cycle of a switch for which the *Wireless* option on the Optional Features form is enabled.

This field is accessible via the init and inads logins.

- *Maximum Wireless Terminals*

Indicates the maximum number of WTs allowed in the system. This number is based on the order of rights-to-use (RTUs) per station. Valid values are from **0** to **1500** inclusive.



**NOTE:**

The number of administered WTs is included in the system-wide count of station and trunk ports that are administered in the *Maximum Ports* field within the Customer-Options form. The value in the *Maximum Wireless Terminals* field must always be less than or equal to the value in the *Maximum Ports* field.

This field can be changed only via the init login.

- *UTAM Disablement*

Used to control whether the UTAM disablement feature is active for a system (that is, whether the DWBS disables itself following a system power cycle).

Default is **y**. This means that, as a default, the radio subsystem is disabled following a power cycle of the system. Whenever a DWBS is power-cycled, the *Radio Transmission* field is set to **n**, and the radios are disabled. A save translations is done on the system, and a major alarm is activated for the system over the INADS line. INADS is set up to log into the DEFINITY ECS and set the *Radio Transmission* field to **y** to restore radio service.

Whenever the field is set to **n**, the radio subsystem is not disabled following a system power cycle. This means that, after a power cycle, the *Radio Transmission* field is not set to **n**, a save translations is not done, a major alarm is not generated, and a call into the DEFINITY ECS is not required to restore radio service. The radio subsystem continues to initialize and operate as normal.

On system upgrades, value **y** is the default for the field.

 **NOTE:**

This field should be changed to **n** only whenever the DWBS resides in countries where the legal requirements for disablement do not apply.

■ *Allowable Carrier Frequencies*

This eight-field option supports the administration of the superset of carrier frequencies that are allowed for a system as determined by UTAM. (UTAM has been designated by the FCC as a frequency coordinator for the unlicensed band.) Values include **y** and **n**. The fields are defaulted to **n** to ensure that the Lucent Technologies engineer is taking positive action to select the frequencies that UTAM determined for a particular DWBS. The allowable carrier frequencies administered in this field define the frequencies that the customer is allowed to administer on the Carrier-Frequencies form.

■ *Port Networks with Radio Controllers*

Indicates the port networks in which the RC circuit packs may be located. A subfield is allotted for each port network in the system. For a G3r system, there are 44 port networks; for a G3si system, there are three port networks. Values include **y** and **n**. The subfields are defaulted to **n** for new installations. For each port network that will contain administered RC circuit packs, the associated subfield for that port network must be changed to **y**.

## Administering Carrier Frequencies

The actual carrier frequencies that a system *will use* are administered on the Carrier-Frequencies form. The carrier frequencies that a system *is allowed to use*, as defined by UTAM, are administered on the Wireless-Related System-Parameters form. The Carrier-Frequencies form enables the user to limit radio transmission to a subset of those carrier frequencies allowable for the DWBS. The form allows the user to limit radio transmissions without infringing upon any UTAM restrictions. Users with one or more of the following logins can use the form: non-super-user login type who has permission to administer features, **init**, **inads**, **craft**, or **super-user**.

Only those frequencies that are administered as **y** on the Wireless-Related System-Parameters form are administrable on the Carrier-Frequencies form. All frequency fields that are administered as **n** on the Wireless-Related System-Parameters form contain **n** and are read-only fields on the Carrier-Frequencies form.

To access and make changes on the form, enter the **change carrier-frequencies** command. To view the carrier frequencies administered on the form, enter the **display carrier-frequencies** command.

An example of the form appears as follows:

```
change carrier-frequencies                                     Page 1 of 1
                                                                 WIRELESS CARRIER FREQUENCIES
Customer Carrier Frequencies (MHz)
0: 1929.375  y
1: 1928.125  y
2: 1926.875  y
3: 1925.625  y
4: 1924.375  y
5: 1923.125  y
6: 1921.875  y
7: 1920.625  y
```

Figure 5-4. Wireless Carrier-Frequencies Form

The eight *Customer Carrier Frequencies* fields support the administration of a subset of carrier frequencies chosen from the allowable carrier frequencies that are enabled on the Wireless-Related System-Parameters form. All of the frequencies administered as **y** on the Wireless-Related System-Parameters form are defaulted to **y** and are administrable on the Carrier-Frequencies form. All of the frequencies administered as **n** on the Wireless-Related System-Parameters form are defaulted to **n** and are read-only values on the Carrier-Frequencies form.

## **Remote Administration**

---

The DWBS has the same remote administration capabilities as the DEFINITY ECS. The same command interface that is available to a directly connected administration terminal is available remotely.

## **Administering 9630 Series WTs**

---

Native support is not provided for the 9630 Series WT. Except for the physical handset, the 9630 Series WT is identical to the 9601 and 9601+ WTs. The 9630 Series WT is administered as an alias of either the 9601 WT or 9601+ WT via the Alias Station form.

Whenever you want two call appearances, you should administer the 9630 Series WT to a 9601 WT. Whenever you want three call appearances, you should administer the 9630 Series WT to a 9601+ WT.

To access the Alias Station form, enter the **change alias station** command. An example of the form appears as follows.

```
change alias station                                     Page 1 of 1

                                     ALIAS STATION

Alias Set Type                                         Supported Set Type

 9630                                                  9601+
-----
-----
-----
-----
-----
-----
-----
-----
-----

'#' indicates previously aliased set type is now native
```

**Figure 5-5. Alias Station Form**

The *Alias Set Type* field in the form represents the aliased set type, and it can contain a maximum of seven characters. The associated *Supported Set Type* field is a keyword field that accepts a value for any natively supported set type. Therefore, for example, if you want three call appearances, enter **9630** into the *Alias Set Type* field and **9601+** into the *Supported Set Type* field. On the other hand, if you want two call appearances, enter **9630** into the *Alias Set Type* field and **9601** into the *Supported Set Type* field.

Once the 9630 Series WT is aliased, it is subject to all of the restrictions, including feature capabilities, of its associated supported set type. Aliasing is transparent to the end user.

Once you submit the form, the value that you entered into the *Alias Set Type* field (for example, **9630**) appears as a valid value in the *Type* field in the Station form (whenever this form is accessed via the **add station** command). Also, the appropriate form is displayed whenever value **9630** is entered into the *Type* field in the Station form.

All other commands that accept a set type as a valid option (for example, **list station type 9630**) also accept value **9630** as if it were natively supported in the DEFINITY ECS.

## Administering the 9601 and 9601+ WTs

The Station form is used to provide native support for the 9601 and 9601+ WTs. The administration of this terminal is the same as that for wired sets. Each 9601 or 9601+ WT has its own Station form and is assigned a unique primary extension number (as defined by the dial plan). The wireless version of the form appears only whenever **9601** or **9601+** is entered into the *Type* field of the form.

To add a WT, enter the **add station <extension>** or **next** command, where **<extension>** is a primary extension number as defined by the dial plan. To change the parameters of a WT, enter the **change station <extension>** command.

An example of the form appears as follows:

```
add station 30001                                     Page 1 of 3
                                                    STATION
Extension: 30001                                     Lock Messages? n_
  Type: 9601                                         Security Code: _____ TN: 1
  Port: WT                                           Coverage Path 1: _____ COR: 1
  Name: _____                                   Coverage Path 2: _____ COS: 1
                                                    Hunt-to Station:
STATION OPTIONS
  Display Module? y                                 Message Lamp Ext: 30001
  Display Language: english
    IPEI: 001151622
  Access Code: 00000
    Home? y
```

Figure 5-6. Station Form (Page 1)

add station 30001		Page 2 of 3	
STATION			
FEATURE OPTIONS			
LWC Reception:	msa-spe	Auto Select Any Idle Appearance?	n
LWC Activation?	y	Coverage Msg Retrieval?	y
CDR Privacy?	n	Data Restriction?	n
Redirect Notification?	y	Idle Appearance Preference?	n
Per Button Ring Control?	n	Restrict Last Appearance?	n
Bridged Call Alerting?	n		
Active Station Ringing:	single		
H.320 Conversion?	n		
		Display Client Redirection?	n
		Select Last Used Appearance?	n

---

**Figure 5-7. Station Form (Page 2)**

```
add station 30001                                     Page 3 of 3
                                                    STATION

SITE DATA
  Room: _____
  Info1: _____
  Info2: _____
  Floor: _____
  Building: _____                               Set Color: _____

ABBREVIATED DIALING
  List1: _____      List2: _____      List3: _____

BUTTON ASSIGNMENTS
  1: brdg-appr  Btn:   Ext:
  2: brdg-appr  Btn:   Ext:
```

**Figure 5-8. Station Form (Page 3)**

The following list identifies and discusses fields in the form that are new or changed for wireless administration.

- *Type*

Enter value **9601** or **9601+** to designate the WT station type if you are administering one of these WT types. If you are administering a 9630 Series WT, be sure to alias it as discussed earlier in this chapter.

**⇒ NOTE:**

The 9630 Series WT is aliased as a 9601 or 9601+ WT. Also, value **9601+** requires Version 6 of the software.

- *Port*

There are no physical connections between the DWBS WT and the Switch Processing Element (SPE). Therefore, this read-only field will contain **WT** whenever the *Type* is changed to **9601** or **9601+**.

- *Display Module*

Enter **y** (default) to enable this option or **n** to disable it.

- *Display Language*

Enter one of the following values: **english** (default), **french**, **italian**, **spanish**, or **user-defined**.



**NOTE:**

Local phone functions are provided in English.

- *IPEI*

This field allows the user to administer each WT's factory-assigned International Portable Equipment Identity (IPEI) number. The IPEI is a unique 9-digit hexadecimal number used to identify a WT for administration and through-the-air communication. This number can be obtained from the WT via several button pushes. (Refer to the Installation document.) The IPEI number that is entered on the form must match the IPEI number that was assigned to the terminal at the factory.

The value for this field must be unique among all other switch-administered IPEIs. The value must contain nine characters. The first four characters should be currently administered as "0011" to denote a WT built by Lucent Technologies. The next five characters are variable and may be any combination of the numbers **0** through **9** and/or the letters **a** through **f** and/or **A** through **F**.

This field may be blank when the form is submitted.

- *Access Code*

This field contains a short security code assigned to the specific DWBS WT. The same code must be entered locally at the WT and on its associated Station form. This field must be administered whenever the *IPEI* field contains valid data.



**NOTE:**

The DWBS WT can store only a single access code. Therefore, there must be coordination between system administrators for administered roamers to ensure that a WT has the same switch-administered access code on all systems for which the WT is administered.

The access code must contain five decimal digits, and it can include any digits in the range of 0 through 9 in any order. The default for the field is blank.

- *Home*

Indicates the location of the WT. Enter **y** if the terminal is on its Home system; enter **n** if the WT is a roamer.

- *Bridged Call Alerting*

Enter **y** (default) to enable bridging or **n** to disable it. Activating this feature also activates the PCOL/TEG alerting feature.

- *Restrict Last Appearance*

Enter **y** to enable this option or **n** (default) to disable it.



**NOTE:**

It is recommended that **n** (default) not be changed.

- *Display Client Redir*

Enter **y** (default) to enable this option or **n** to disable it.



**NOTE:**

This field requires that the *Display Module* field be set to **y**.

The following two fields are included within the "Site Data" area on page 3 of the form:

- *Info1*

Enter a maximum of five alphanumeric characters for identification. Default value is blank.

- *Info2*

Enter a maximum of five alphanumeric characters for identification. Default value is blank.

Finally, for the *Button Assignments* area, the WT supports only the following administrable types for buttons 1, 2, and 3: **call-appr** (default), **brdg-appr**, and **abrdg-appr**. The following configurations are possible:

- Three buttons administered as **call-appr** with the third button administered only for a 9601+ WT
- Three buttons administered as **brdg-appr** with the same principal extension and with the third button administered only for a 9601+ WT
- One button administered as **abrdg-appr** with the other two (and the third only) administered as **call-appr**

The associated fields may contain a maximum of 10 characters.



**NOTE:**

In a bridging arrangement, only one WT is allowed.

Whenever the WT is administered with three **brdg-appr** buttons, the *Auto Select Any Idle Appearance* field must be set to **y**.

## **Unsupported Features and Components**

---

The DWBS WTs do not support, or have nothing to do with, the following features or components:

- Data modules
- Personalized Ringing
- Auto-Answer
- Speakers
- Mounting
- Cord length
- Buttons 3 through 9

## **Adding Radio Controller Circuit Packs**

---

RC circuit packs are added to the system usually by physically inserting the circuit packs into the appropriate carrier slots. As an alternative, RC circuit packs can be added via logical administration, as discussed in the following section.

### **Logical Administration**

---

The Circuit Packs form is used to complete a logical administration of the TN789 RC circuit pack. Logical administration means that the circuit pack is not physically inserted into the cabinet but rather added to it via administration. The RC circuit pack may be logically administered into any universal port slot on the SPE.

An example of the form appears as follows:

```

change circuit-packs                                     Page 2 of 5
                CIRCUIT PACKS
      Cabinet: 1                      Carrier: B
Cabinet Layout: five-carrier          Carrier Type: port

Slot Code  Sfx  Name                               Slot Code  Sfx  Name
00:                                               11: TN753    DID TRUNK
01: TN570   EXPANSION INTF                    12: TN789    RADIO CONTROLLER
02: TN763   C   AUXILIARY TRUNK                13: TN577    PGATE BOARD
03: TN726   DATA LINE                          14: TN789    RADIO CONTROLLER
04: TN771   D   MAINTENANCE/TEST              15: TN789    RADIO CONTROLLER
05: TN753   DID TRUNK                            16:
06: TN767   DS1 INTERFACE                       17: TN767    DS1 INTERFACE
07: TN760   B   TIE TRUNK                       18: TN742    ANALOG LINE
08: TN464   F   DS1 INTERFACE                   19:
09:                                               20:
10: TN789   RADIO CONTROLLER

`#` indicates circuit pack conflict.

```

**Figure 5-9. Circuit Packs Form**

To administer the RC circuit pack logically, first access the Circuit Packs form by entering the **change circuit packs** command. Then enter **TN789** into the *Code* field. The **Radio Controller** string will appear in the *Name* field associated with the slot.

## Administering Radio Controller Circuit Packs

RC circuit packs are administered to do the following:

- Define where RC circuit packs are located
- Identify the WFBs associated with the RC circuit pack
- Identify the CAUs associated with each WFB
- Indicate the location of all WFBs and CAUs associated with the RC circuit pack

Administration is done via the Radio Controller Circuit Pack form. To add or make changes to the form, enter the **add radio-controller <PPCSS>** or **change radio-controller <PPCSS>** command, where **<PPCSS>** identifies the physical location of an RC circuit pack according to a port network, carrier, and slot designation (for example, 01B04).

Two versions of the form appear as follows:

```
change radio-controller 1a05 Page 1 of 1
                                RADIO CONTROLLER CIRCUIT PACK      RC Location: 01A05

WFB A PARAMETERS
Internal Antenna? n
  WFB Location: 3A* - 1st floor aisle c2_____
    CAU Conn? CAU Location
      1   y   Outside of room 1c203_____
      2   y   in boiler room by stairs_____
      3   n   Hall outside of room 1c225_____
      4   n   1st floor elevator lobby_____

WFB B PARAMETERS
Internal Antenna? n
  WFB Location: _____
    CAU Conn? CAU Location
      1   n   _____
      2   n   _____
      3   n   _____
      4   n   _____
```

---

**Figure 5-10. Radio Controller Circuit Pack Screen**

```

change radio-controller 1b12                                     Page 1 of 1
                                                                RADIO CONTROLLER CIRCUIT PACK      RC Location: 01B12

WFB A PARAMETERS
Internal Antenna? n
  WFB Location: mtmm3 1b-505_____
    CAU  Conn? CAU Location
    1     y    mtmm3 1b-505_____
    2     n    _____
    3     n    _____
    4     n    _____

WFB B PARAMETERS
Internal Antenna? n
  WFB Location: _____
    CAU  Conn? CAU Location
    1     n    _____
    2     n    _____
    3     n    _____
    4     n    _____
  
```

**Figure 5-11. Radio Controller Circuit Pack Screen (With WFB Internal Antenna)**

The following list identifies and discusses the fields in the form:

- *RC Location*

Read-only field that displays the <PPCSS> address where the RC circuit pack is inserted or logically administered.

The form contains two WFB Parameter areas: “WFB A Parameters” and “WFB B Parameters.” The following items identify and discuss the fields in these areas:

- *Location*

A total of 10 *Location* fields are on the form.

Under the WFB A Parameters area, the *WFB Location* field is used to administer the location of WFB A. Each CAU field (1-4) under the WFB A Parameters area has its own *Location* field to administer its physical location. If at least one of the *CAU* or *Internal Antenna* fields associated with WFB A is set to **y**, the WFB A’s *Location* field is required to submit the form. If the *Conn* field associated with a CAU (1-4) under the WFB A Parameters area is set to **y**, the *Location* field associated with that CAU is required to submit the form.

Under the WFB B Parameters area, the *WFB Location* field is used to administer the location of WFB B. Each *CAU* field (1-4) under the WFB B Parameters area has its own *Location* field to administer its physical location. If at least one of the *CAU* or *Internal Antenna* fields associated with WFB B is set to **y**, the WFB B's *Location* field is required to submit the form. If the *Conn* field associated with a CAU (1-4) under the WFB B Parameters area is set to **y**, the *Location* field associated with that CAU is required to submit the form.

To specify a location, enter an alphanumeric string of no more than 40 characters. The default is blank.

**⇒ NOTE:**

Internal antennas and CAUs are mutually exclusive. As such, each WFB can have either one internal antenna or one or more CAUs.

■ *Internal Antenna*

Enter **n**, unless your system has an internal antenna via special order. Otherwise, the WFB will not work.

■ *Conn*

Specifies, for each CAU, whether that CAU is connected to a particular WFB. One such field is needed for each CAU. Each form contains a total of eight such fields, four for each WFB. Values include **y** and **n**.

**⇒ NOTE:**

If the field is set to **y**, the *Location* field for the relevant CAU and WFB must be populated. Also, the relevant CAU must be busied out before changing the *Conn* field value from **y** to **n**.

## Enabling RC Circuit Packs to Upgrade Components

---

The Feature-Related System-Parameters form is used to administer certain RC circuit packs to receive firmware files and to act as download servers to upgrade the WTs, RCs, and WFBs in the system. Only RC circuit packs added to the system via the **add radio-controller** command are accepted as valid field entries. Also, entries are accepted only if the *Wireless* option has been enabled on the Customer-Options form.

To access and make changes to the form, enter the **change system-parameters features** command. An example of page 2 of the form appears as follows:

```
change system-parameters features Page 2 of 8

FEATURE-RELATED SYSTEM-PARAMETERS
LEAVE WORD CALLING PARAMETERS
Maximum Number of Messages Per Station (when MSA not in service): 10
Stations with System-wide Retrieval Permission (enter extension)
1:          3:          5:          7:          9:
2:          4:          6:          8:          10:

WARNING! SEE USER DOCUMENTATION BEFORE CHANGING TTI STATE
Terminal Translation Initialization (TTI) Enabled? n

Prohibit Bridging Onto Calls With Data Privacy? n
Enhanced Abbreviated Dial Length (3 or 4): 3
Call Forward Override? y
External Coverage Treatment for Transferred Incoming Calls? y
Coverage of Calls Redirected Off-Net Enabled? y

WIRELESS PARAMETERS
Radio Controllers with Download Server Permission (enter board location)
1: 01C10  2: 01C12  3:          4:          5:
```

---

**Figure 5-12. Feature-Related System-Parameters Form (Page 2)**

Within the “Wireless Parameters” area of the form, the *Radio Controllers with Download Server Permission* field contains five subfields to support the administration of up to five RC download servers. For each field, enter the board location according to the following components in the prescribed order:

- Cabinet (1 [G3si, G3vs]; 1 through 3 [G3i]; 1 through 44 [G3r])
- Carrier (A through E)
- Slot (0 through 20)

For example, “01C10.”

The default for the field is blank.

---

# Maintenance

# 6

---

## Introduction

The DEFINITY Wireless Business System uses the DEFINITY ECS maintenance model for determining status and for testing. The maintenance-related functions described in this chapter include testing various components in the system via a command interface. The activities discussed in this chapter are done from the DEFINITY ECS Management Terminal (MT).

**⇒ NOTE:**

For information on DWBS Maintenance Objects (MOs), refer to the DWBS Maintenance document.

## Determining WT Health

The system can test the WT to determine the WT's health. The test passes if the WT can communicate and does not have internal errors. An indication is provided if internal errors are present and the WT can communicate (that is, a connection is established). If the WT does not respond (because, for example, it is not linked), this condition is reported.

## Determining WT Status

The Status Station report provides the following information regarding the DWBS:

- New service states (as needed)
- Cell association (that is, CAU in use)

To access the report, enter the **status station <ext>** command.

The following report is an output for the **status station 52600** command.

```

status station 52600

                                GENERAL STATUS

                Type: 9601                Service State: disconnected
                Extension: 52600           Download Status: not applicable
                Port: WT                   SAC Activated? no
                Call Parked? no            User Cntrl Restr: none
                Ring Cut Off Act? no       Group Cntrl Restr: none
                Active Coverage Option: 1   CF Destination Ext:
                Mobility State: out-of-system Access Rights: no
                                           Key Allocation: not applicable

                Message Waiting:
                Connected Ports:

                                ACD STATUS

                Grp/Mod Grp/Mod Grp/Mod Grp/Mod Grp/Mod
                / / / / /
                / / / / /
                / / / / /
                / / / / /
                On ACD Call? no

                                HOSPITALITY STATUS

                AWU Call At:
                User DND: not activated
                Group DND: not activated
                Room Status: non-guest room

```

**Figure 6-1. General Status Report**

## Displaying RC, WFB, and CAU Status

The system displays the RC, WFB, and CAU status in the Radio Controller Status report. Information includes the connected ports and WTs that are active on a bearer channel per each WFB provided. To access the Radio Controller Status report, enter the ***status rc <PPCSS>*** command.

The report appears as follows:

```
status radio-controller 1b12 Page 1 of 2
                                RADIO CONTROLLER STATUS
RC Location: 01B12           Busied-out?: n           Connected WFBs: 1
                                ACTIVE WTs
                                WFB A                WFB B
                                WT Ext CAU           WT Ext CAU           WT Ext CAU
                                _____ _____   _____ _____   _____ _____
                                _____ _____   _____ _____   _____ _____
                                _____ _____   _____ _____   _____ _____
                                _____ _____   _____ _____   _____ _____
                                _____ _____   _____ _____   _____ _____
```

Figure 6-2. Radio Controller Status Report (Page 1)

```

status radio-controller 1b12                                     Page 2 of 2

                                RADIO CONTROLLER STATUS

RC Location: 01B12          Service State: in-service          Busied-out?: n
No. Active WTs: 0          Connected WFBs: 1

WFB A STATUS: Port: 01B12A  Int. Antenna?: n  Service State: in-service
Conn?: y                    Busied-out?: n  No. Active WTs: 0

    Conn?  Service State      Busied-out?  No. Active WTs
CAU 1:    y    in-service        n             0
CAU 2:    n    _____        -             -
CAU 3:    n    _____        -             -
CAU 4:    n    _____        -             -

WFB B STATUS: Port: 01B12B  Int. Antenna?: _  Service State: _____
Conn?: n                    Busied-out?: _  No. Active WTs: _

    Conn?  Service State      Busied-out?  No. Active WTs
CAU 1:    n    _____        -             -
CAU 2:    n    _____        -             -
CAU 3:    n    _____        -             -
CAU 4:    n    _____        -             -
    
```

**Figure 6-3. Radio Controller Status Report (Page 2)**

## Displaying Circuit Pack Information

---

The **list configuration all** and **list configuration board <PPCSS>** commands produce the System Configuration report. If **all** is specified, all the circuit packs installed (RC and non-RC) are displayed. If **board** is specified, only the circuit pack at location **<PPCSS>** is displayed.

The following report is an output for the **list configuration board 01b12** command.

```
list configuration board 1b12

                          SYSTEM CONFIGURATION

Board
Number  Board Type      Code   Vintage  Assigned Ports
                u=unassigned t=tti p=psa
01B12   RADIO CONTROLLER  TN789  000001
```

---

**Figure 6-4. System Configuration Report (For One Circuit Pack)**

For an RC circuit pack, the *Assigned Ports* field in the report identifies the Category 3 4-pair twisted cable ports that have been administered. The information in this field within the previous figure indicates that the specified RC circuit pack has both Category 3 4-pair twisted cable ports administered.

## Displaying Vintages, Software Versions, and Configurations

The Radio Controller Circuit Pack Configurations report displays the following:

- Hardware vintage of the WFB
- Software version of each RC circuit pack in the system
- Hardware and firmware configuration for the RC circuit pack at location <PPCSS> and the hardware configuration for any connected WFBs

Enter either the **list all** or **list configuration radio-controller port network/carrier/slot/circuit** command to access the report. The report appears as follows:

```
list configuration radio-controller all Page 1
```

RADIO CONTROLLER CIRCUIT PACK CONFIGURATIONS								
Loc	Code	Cluster ID	Board Vintage	Board Version	WFB A Vintage	WFB A Version	WFB B Vintage	WFB B Version
06A09	TN789	2	000011	8.1.4	000037	000017	no WFB	no WFB
06A11	TN789	3	000012	8.1.4	000017	000017	000017	000017
06A13	TN789	1	000012	8.1.4	000017	000017	000017	000017
06A15	TN789	4	000011	8.1.4	000017	000017	000017	000017
06A17	TN789	5	000012	8.1.4	000017	000017	no WFB	no WFB
06B09	TN789	14	000012	8.1.4	000017	000017	000017	000017
06B11	TN789	10	000012	8.1.4	000017	000017	000017	000017
06B13	TN789	11	000012	8.1.4	000017	000017	000017	000017
06B14	TN789	6	000012	8.1.4	000017	000017	000017	000017
06B16	TN789	9	000012	8.1.4	000017	000017	000017	000017

**Figure 6-5. Radio Controller Circuit Pack Configurations Report**

## Displaying WT Hardware Vintage and Firmware Version

---

The WT Configuration-Wireless Terminal Stations report displays the hardware vintage and firmware version of the WTs. To access the report, enter the **list configuration wt-stations** command.

The report appears as follows:

```
list configuration wt-stations
```

WT CONFIGURATION - Wireless Terminal Stations				
Extension	WT IPEI	WT Firmware Version	WT Hardware Vintage	Last Access Rights
30001	001130001	02.8.0	00.00.05.1	08/22/1996 08:59
30002	001130002	00.0.0	01.00.05.1	02/15/1996 19:18
30004	001130004	02.8.0	01.00.05.1	08/22/1996 11:39

---

**Figure 6-6. WT Configuration-Wireless Terminal Stations Report**

## Displaying Firmware Summary Information

---

Display firmware information for all of the appropriate DWBS components by issuing the **list configuration firmware-versions** command to bring up the Firmware Versions form. An example of the form appears as follows.

```
list configuration firmware-versions Page 1
```

FIRMWARE VERSIONS			
Name	Version	Size	Checksum
TN789 RC 8.1	8.1.0	37000	6629
WFB v17	0.0.17	8000	4E89
WT 9601 3CA	0.5.5	2C6E0	1CC9

---

**Figure 6-7. Firmware Versions Form**

## **Storing WT Information**

---

The hardware vintage and firmware version of the WT are stored in the Switch Processing Element (SPE) software. This information is updated each time a WT successfully completes access rights.

## **Establishing and Releasing the Maintenance Busy State**

---

The DWBS uses several **busyout** and **release** commands. The **busyout** commands are used to place a MO into a maintenance busy state. The maintenance busy state causes active calls on the MO to disconnect, and it prevents DEFINITY ECS call processing from using the busied-out resource. A warning alarm is logged to indicate the busied-out status. The **release** commands are used to return the MO to its normal service state after a **busyout** command is issued.

## **Disconnecting Calls on a WT**

---

The **busyout station port network/carrier/slot** command enables DEFINITY ECS call processing to disconnect all calls on the WT. The WT is not available for new origination or for new termination of calls. Whenever the command is issued, the system does not direct incoming calls to the specified WT. If the WT attempts to originate a call, the system does not allow the call, and it gives the WT the reason for the maintenance busy state. If the WT attempts to originate the access rights procedure or location registration procedure, it succeeds. Successful completion of these two procedures while the WT is in the maintenance busy state allows the Mobility Manager (MM) to find the WT when the **release station port network/carrier/slot** command is issued.

The **release station port network/carrier/slot** command returns the WT to its previous state.

## **Disconnecting Calls on an RC Circuit Pack**

---

The **busyout board port network/carrier/slot** command causes DEFINITY ECS call processing to disconnect all calls on the RC circuit pack. The RC circuit pack is not available for new origination or new termination of calls. All radio transmissions from WFBs or CAUs connected to that RC stop. The **release board port network/carrier/slot** command returns the RC to its power-up state.

### **Disconnecting Calls on a WFB**

---

The **busyout WFB port network/carrier/slot** command causes DEFINITY ECS call processing to disconnect all calls on the WFB. The WFB is not available for new origination or new termination of calls. All radio transmissions from the WFBs stop. The **release WFB port network/carrier/slot** command returns the WFB to its power-up state.

### **Dropping the Radio Beacon Signal**

---

A WFB does not transmit a radio beacon signal on any CAUs (including the internal antenna) associated with the WFB after the WFB is busied out. Similarly, a CAU does not transmit radio signals after the CAU is busied out. The appropriate **release port network/carrier/slot** command for each object returns the object to its initial power-up state.

### **Stopping Radio Transmission and Reception on a CAU**

---

The **busyout CAU port network/carrier/slot** command stops radio transmission and reception on the CAU. The command does not drop active calls; however, it is not available for new origination. The **release CAU port network/carrier/slot** command returns the CAU to its previous state.

---

## Traffic Measurements

# 7

---

### Introduction

Periodic reports regarding traffic measurements for the DWBS are provided on a per-cell basis. These reports allow customers to verify that they are making the most efficient use of their telecommunications facilities. The reports provide DWBS usage data.

To enable wireless measurements, the *Wireless* field in the Customer-Options form must be enabled. (See the Administration chapter.)

## **Accessing Measurements Reports**

---

DWBS Measurements reports can be accessed locally at customer sites by system administrators and technicians via the DEFINITY ECS Management Terminal (MT). The reports can also be accessed by service technicians remotely through the INADS interface; this allows customers at multiple sites to centralize the maintenance and traffic data evaluation process.

The general command syntax for accessing measurements reports is **list measurements cell-traffic [<cell-addr><cell-address>/summary] [yesterday-peak/today-peak/last-hour] [print/schedule]**.

### **Cell Traffic Report**

---

The Cell Traffic report provides several wireless system traffic measurements. Three versions of the report are available.

To access information on the cell traffic for the previous hour, enter the **list measurements cell-traffic summary last-hour** command. An example of this version of the report appears as follows:

 **NOTE:**

Within the following reports, information for all of the CAUs associated with a WFB are reported first, followed by the information for the associated WFB. For example, in the report immediately following this note, the first four lines of information starting with "01B10B1" contain information for the four CAUs associated with the WFB for which information is provided in the fifth line starting with "01B10B."

```
list measurements cell-traffic summary last-hour

Switch Name:                               Date: 11:03 am  THU NOV 20, 1997
      WIRELESS REPORT : CELL TRAFFIC
      ' '=No Measurements *=Invalid Hour
      Total wireless call connectivity for the hour : 2
      Total wireless call connectivity for the day : 50

Cell      Meas %Time  Usage  TotBch  PeakBch %Time %Time  Hand
Address  Hour  In-Sys (CCS)  Seized  In-Use  ACB   OutServ Overs
-----
SYSTEM  1000 NA      72     4       NA     NA     NA     0
01B10B1 1000 *       *       *       NA     NA     NA     *
01B10B2 1000 *       *       *       NA     NA     NA     *
01B10B3 1000 *       *       *       NA     NA     NA     *
01B10B4 1000 *       *       *       NA     NA     NA     *
01B10B  1000 *       *       *       NA     NA     NA     *
01B12A1 1000 NA     72     4       NA     NA     NA     0
01B12A  1000 100    72     4       2      0      0     NA
```

**Figure 7-1. Cell Traffic Report (Summary for Last Hour)**

To access information on today's peak-hour cell traffic, enter the **list measurements cell-traffic summary today-peak** command. An example of this version of the report appears as follows:

```
list measurements cell-traffic summary today-peak

Switch Name:                               Date: 11:03 am  THU NOV 20, 1997
      WIRELESS REPORT : CELL TRAFFIC
      ' '=No Measurements *=Invalid Hour
      Total wireless call connectivity for the hour : NA
      Total wireless call connectivity for the day : 50
Cell      Meas %Time  Usage TotBch PeakBch %Time %Time  Hand
Address  Hour  In-Sys (CCS) Seized In-Use  ACB  OutServ Overs
-----  -
01B10B1 *    *    *    *    NA    NA    NA    *
01B10B2 *    *    *    *    NA    NA    NA    *
01B10B3 *    *    *    *    NA    NA    NA    *
01B10B4 *    *    *    *    NA    NA    NA    *
01B10B   *    *    *    *    NA    NA    NA    *
01B12A1 800  NA    84    8    NA    NA    0
01B12A  800 100   84    8    3    0    0    NA
```

**Figure 7-2. Cell Traffic Report (Peak-Hour Summary for Today)**

To access information on yesterday's peak-hour cell traffic, enter the **list measurements cell-traffic summary yesterday-peak** command. An example of this version of the report appears as follows:

```
list measurements cell-traffic summary yesterday-peak

Switch Name:                               Date: 11:03 am  THU NOV 20, 1997
                WIRELESS REPORT : CELL TRAFFIC
                ' '=No Measurements *=Invalid Hour
                Total wireless call connectivity for the hour : NA
                Total wireless call connectivity for the day : 50
Cell      Meas %Time  Usage TotBch PeakBch %Time %Time  Hand
Address  Hour  In-Sys (CCS) Seized In-Use  ACB  OutServ Overs
-----  -
01B12A1  900  NA     72    4     NA     NA     NA     0
01B102A  900  100   72    4     2     0     0     NA
```

**Figure 7-3. Cell Traffic Report (Peak-Hour Summary for Yesterday)**

The following list identifies and describes the fields in the forms.

- *Date*

Indicates the date and time when the customer entered the command on the DMT to access the report. This value is based on the system time maintained by the system.



**NOTE:**

The system time can be set by using the **set time** command. However, it is recommended that you not use this command. Changing the system time may affect the traffic measurements.

- *Total Wireless Call Connectivity for the hour*

This field provides a count of the actual number of calls originated by WTs and also offered to WTs within the DWBS as a whole. The field value represents call attempts that may or may not have been completed. Call originations and call terminations (that is, calls ringing at a WT) are considered two separate activities. A WT can handle multiple call originations and terminations during the same session once a traffic bearer channel is established. The WT does this by using multiple call appearances.

The following list provides examples of how some call scenarios are counted in this measurement.

- Whenever a WT originates a call that rings at another WT (which may or may not be on the same cell), this counts as two wireless call activities.
- Whenever a WT calls a wired station, this counts as one activity.
- Whenever a call rings at a WT, this counts as a call activity at that WT, irrespective of whether the call is answered by that WT.
- Whenever a call to a WT is redirected due to activation of the Call Forwarding feature, this does not count as a call activity at the WT because the call does not actually terminate at the WT.
- Whenever a call is redirected to another WT due to any coverage criteria (including Send All Calls), and the call rings at that covering WT, this counts toward this metric.
- Whenever several WTs are involved in a conference call scenario, all the WTs within this conference count toward this metric.

The report contains the system-wide count of the total wireless call connectivity for the hour and the total wireless call connectivity for the day at the top of the report. The last-hour report shows the cumulative total of the wireless call activity, while the “peak” reports merely display “NA” within the field.

- *Total Wireless Call Connectivity for the day*

This field provides a count of the actual number of calls originated by WTs and also offered to WTs within the DWBS as a whole. The field value represents call attempts that may or may not have been completed. Call originations and call terminations (that is, calls ringing at a WT) are considered two separate activities. A WT can handle multiple call originations and terminations during the same session once a traffic bearer channel is established. The WT does this by using multiple call appearances. (See the previous bullet list for examples of how some call scenarios are counted in this measurement.)

A cumulative of the total call connectivity for the last hour from midnight until the last hour for the current day is collected and reported on a system-wide basis. The last-hour report shows the cumulative total of the wireless call activity.

- *Cell Address*

Identifies the port ID associated with the WFB and the CAU number (if applicable) in terms of the Port Network Number/Carrier/Slot of the RC/WFB/CAU. The address information does not provide the physical location or the DECT format of address of these devices; rather, it provides the DEFINITY system's knowledge of their addresses as they are administered on the switch.

On the report, the same field is used to denote the cell address or the WFB address. The cell-based reporting lines contain the cell address in the form "PPCSSwc." The WFB-based report line contains the WFB address in the form "PPCSSw."

The WFB is considered to be administered if any of the CAUs at the associated WFB are administered. This includes the internal antenna; the antenna is displayed as "CAU 0" in the measurements reports.

The following field applies to both cell-based and WFB-based information on the Wireless Traffic Measurements report.

- *Meas Hour*

Indicates the starting time of the hour during which the data was recorded. A 24-hour clock is used. The peak hour for a cell/WFB is the starting time of the measurement hour during the day with the greatest total usage in time. The total usage for a WFB is determined by adding up the total usage for *all associated cells*. Therefore, the peak hour for a WFB may be different from those for cells.

This field contains either measurement-hour or peak-hour information, depending on the type of report requested.

For the last-hour report, the most recently completed measurement hour is shown. (In this case, each cell/WFB measurement hour is identical.) For example, if the **list measurements** command is entered between 10 o'clock and 11 o'clock, the measurement provided is for 9 o'clock to 10 o'clock, and the field contains "9:00."

For the today-peak report, the *Measurement Hour* field contains the peak hour for each cell/WFB to this point on the day of the report (therefore, each cell/WFB's measurement/peak hour could be different).

For the yesterday-peak report, the *Measurement Hour* field contains the peak hour for each cell/WFB to this point on the previous day (therefore, each cell/WFB's measurement/peak hour could be different).

The following field applies only to WFBs.

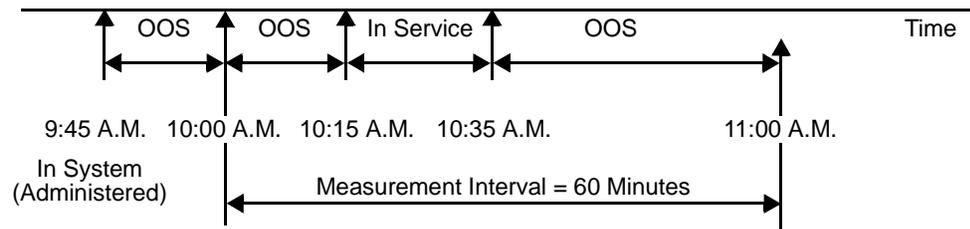
- *% Time in-Sys (Percent of Time In-System)*

Indicates the percentage of time during the polling interval that a WFB was administered. This data is useful because the WFB may have been added at any time during the measurement hour. For example, a WFB that was administered for 15 minutes may not have been used as much as another WFB that was in the system during the complete hour. In this case, the first WFB was in the system for 25 percent of the time, and the other WFB was in the system for 100 percent of the time.

This value provides a base measurement on which many of the other traffic measurements are based. The amount of time during which the WFB has been administered affects the calculation of the following measurements:

- **Usage in CCS, Total Bearer Channels Seized, Peak Bearer Channels in Use, Percentage of Time ACB, Handovers.** These are computed or counted by the system over the interval during which the WFB has been administered and in service. There cannot be any call-related activities at the WFB unless this is administered and in service.
- **Percent of Time Out of Service (OOS).** This is based on the amount of time the WFB was made busy by maintenance versus the amount of time the WFB has been administered. For example, assume that WFB A was administered at 10:15 A.M. and that WFB B was already administered at 10:00 A.M. Also assume that WFB A was out of service from 10:30 A.M. to 10:40 A.M. and that WFB B was in service during the complete measurement hour (10:00 A.M. to 11:00 A.M. ). At 11:00 A.M., the last-hour measurements are calculated as follows: WFB A has been out of service for 10 minutes out of 45 minutes, and WFB B has been out of service for zero minutes out of 60 minutes. The percent of time out of service is 22 percent for WFB A and 0 percent for WFB B.

**Example 1:** WFB A was administered at 9:45 A.M., and it has been kept out of service since that time. At 10:15 A.M., a technician brings WFB A in service. WFB A is in service for 20 minutes and then goes out of service.



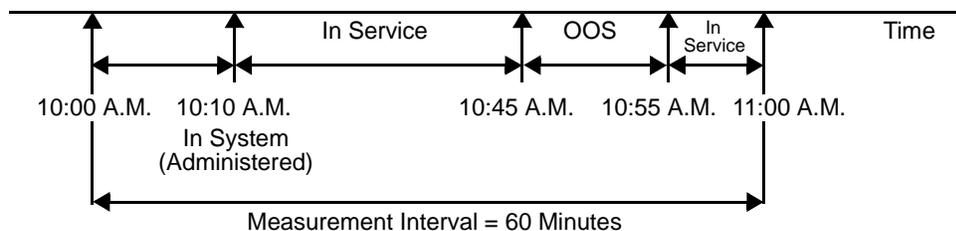
**Figure 7-4. Example 1: Percent of Time In-Service Measurements**

At 11:00 A.M., the MM computes the WFB A time in service and time out of service for the last hour as follows:

Percent of Time in System = 100 percent, since WFB A was already administered at 10:00 A.M.

Percent of Time Out of Service = 66 percent, since WFB A was out of service for 40 minutes out of 60 minutes

**Example 2:** WFB B was administered at 10:10 A.M., and it came in service immediately after this time. At 10:45 A.M., WFB B was made maintenance busy for an interval of 10 minutes. At 11:00 A.M., the WFB B was active again.



**Figure 7-5. Example 2: Percent of Time In-Service Measurements**

At 11:00 A.M., the MM computes the WFB B time in service and time out of service for the last hour as follows:

Percent of Time In System = 83 percent, since WFB B was administered during 50 minutes of the last measurement interval

Percent of Time Out of Service = 2 percent, since WFB B was out of service during 10 minutes out of 50 minutes during the last measurement interval

- **Usage (CCS)**

Indicates the total time in hundred call seconds (CCS) that bearer channels are allocated for the WTs at a cell.

This field is provided for cell-based as well as WFB-based reporting. To provide easy access to system-wide usage data, the last-hour report contains the value for this field for the entire system at the top of the report.

- *TotBch Seized (Total Bearer Channels Seized)*

Indicates the number of times the bearer channels were seized by the associated cell for call- or mobility-related activities. This count does not exclusively include successfully completed calls during the polling interval.

This field is not necessarily the same as the *Total Wireless Call Connectivity* field described previously. This is true because a WT can handle multiple call originations and terminations during the same session once a traffic bearer channel is established by using multiple call appearances. There may be several calls that correspond to one bearer channel seizure. In addition, there may be channel seizures that do not result in any call since bearer channels may be used for location registrations and other mobility tasks.

This field appears in cell-based reports and WFB-based reports. WFB-based reports contain the sum of bearer channels seized by each of the cells on the WFB. To provide easy access to system-wide usage data, the last-hour reports contain the field value for the entire system at the top of the report.

 **NOTE:**

The count for total wireless call activity is purely call-related. This field includes the count of bearer channels used for inter- and intra-RC handovers as well.

- *PeakBch In-Use (Peak Number of Bearer Channels in-Use)*

Indicates the peak number of traffic bearer channels that are simultaneously in use at a WFB during the polling interval. This includes channels carrying voice and data communications. It does not include channels that are unavailable for allocation because they are being made busy by maintenance.

This measurement is reported as WFB-based information only. The range of values is 0 through 12. The field is reported as “NA” on the CAU-based reporting lines on the Traffic Measurements screen.

- *% Time ACB (Percent of Time All Channels Busy)*

Indicates the percentage of time that all traffic bearer channels are simultaneously in use at a WFB during the measurement interval. “In use” means that the traffic bearer channels are busy on call-related or mobility activities and are therefore unavailable to be allocated to WTs that make an allocation request. This measurement indicates the percent of time that no new traffic bearer channel allocation requests can be honored at the associated WFB because the channels were busy with wireless activities.

This measurement does not provide blocking data. However, a high percentage here and a low out-of-service percentage may indicate a blocking situation caused by a lack of resources.

This measurement is valid for WFB-based reporting only. This is true because all CAUs on a WFB share the same traffic bearer channels. Also, this measurement is reported as WFB-based information only. The field shows "NA" on the CAU-based reporting lines of the Traffic Measurements screen.

- *% Time OutServ (Percent Time Out of Service [OOS])*

Indicates the percentage of time during the polling interval that a WFB was made busy by maintenance and was therefore not available for call-related activities. This measurement provides some indication of the health of the I2 link. A WFB or an RC may be taken out of service by the switch whenever an excessive number of errors occur, by maintenance personnel to run diagnostic tests, or whenever the circuit pack is physically removed. Whenever a WFB or an RC is taken out of service, all the I2 traffic bearer channels at the WFB or RC become unavailable for normal wireless traffic. However, individual traffic bearer channels cannot be taken in or out of service. The objective is to minimize the out-of-service time and to bring the resources back "in service" as soon as possible.

This measurement is valid on a WFB basis. Therefore, it is collected on a per-WFB basis. The system keeps track of the start and stop of the maintenance busy state for the WFB or RC. This time length is used to determine the actual percentage of time that a WFB is out of service.

This measurement is reported as WFB-based information only. The field shows "NA" on the CAU-based reporting lines of the Traffic Measurements screen.

- *Handovers*

Indicates the number of handovers handled by the cell during the measuring period. This includes handovers between CAUs on the same WFB (intra-WFB and intra-RC) and on different WFBs on the same RC (inter-WFB but intra-RC). It also includes handovers between CAUs that are on different RCs (inter-RC handovers).

This measurement is reported as CAU-based information. In addition, the last-hour reports contains the handovers for the entire system at the top of the report. The field shows "NA" on the CAU-based reporting lines of the Traffic Measurements screen.



---

# Glossary

---

## A

### **access rights**

Air interface procedure that assigns to the WT a Temporary Portable User Identifier (TPUI) and its extension number. The WT initiates this procedure each time it enters a system. A successful completion of the procedure includes an implicit Location Registration.

### **Auto-Reconnect**

Feature that enables a calling party to reconnect to a called party if the latter walks out of the coverage area and then back into the coverage area within 60 seconds.

---

## B

### **Bridging**

Feature that allows both the WT and the wired phone to ring at the same time.

---

## C

**CAU.** See **Cell Antenna Unit**.

### **cell**

Radio coverage area of a CAU or WFB with an internal antenna cluster. Also, cells supported by all of the WFBs connected to one RC.

### **Cell Antenna Unit (CAU)**

Optional remote antenna that connects to a Wireless Fixed Base. It contains a transmit power amplifier, transmit/receive switch, low-noise receive amplifier, and antenna.

---

## D

### **Deep Sleep Mode**

Mode assumed by the WT whenever the phone repeatedly tries to access the system and fails to do so due to out-of-range conditions. This mode allows the WT to conserve battery power.

### **DEFINITY Management Terminal**

Data terminal used for the administration and maintenance of the DEFINITY ECS.

---

## E

### **Emerging Technologies Band**

20 MHz of unlicensed spectrum for Personal Communication Service (PCS) in North America. The band is isochronous (1920-1930 MHz) with eight channels of 1.25 MHz bandwidth per channel primarily for voice, and asynchronous (1910-1930 MHz) primarily for data.

### **Estimator**

Tool within the WiSE Expert Design System that is used to gather information about the customer site. This tool is used to provide an initial price quote and to configure the DWBS.

---

## F

**FCC.** See **Federal Communications Commission**

**FDMA.** See **Frequency Division Multiple Access**

### **Federal Communications Commission (FCC)**

US government agency that is responsible for assigning and regulating the radio spectrum so that it can be shared by many users without unacceptable interference.

### **fixed part**

Part of the DWBS radio infrastructure that is not portable. This includes the Radio Controllers, Wireless Fixed Bases, and Cell Antenna Units.

### **Frequency Division Multiple Access (FDMA)**

Radio access method for which each call uses a different carrier frequency. FDMA allows one conversation per radio.

---

## H

### **hard keys**

Dedicated buttons on the WT that are labeled for particular functions (for example, making calls).

### **hardware vintage**

Numbering scheme for identifying the components and physical design of a DWBS part, such as a circuit pack.

---

## I

### **I2**

Interface between a Radio Controller and a Wireless Fixed Base.

### **I3**

Interface between a Wireless Fixed Base and a Cell Antenna Unit.

**Initialization and Administration System**

Services support system for PBX administration and maintenance.

**International Portable Equipment Identity**

Unique number used to identify a WT for administration and through-the-air communication. This number is sent by the WT to the fixed part during the access rights procedure.

**International Portable User Identity**

Number sent by the fixed part to a WT during the access rights procedure. Also, this number is sent by the WT to the fixed part during the location registration procedure.

**IPEI.** See **International Portable Equipment Identity.**

**IPII.** See **International Portable User Identity.**

---

**L**

**local features**

Features that are supported by the WT (for example, Silent Mode).

**local tones**

Tones produced locally in the WT. Includes the following tones: ringer, warning, error, error beep, confirmation, and key click.

**Location Registration**

Through-the-air procedure used by the WT to inform the fixed part that it has moved to a new cluster. If the WT is active on a call, Location Registration is implied whenever there is an inter-RC or connection handover.

---

**M**

**Mobility Manager (MM)**

Software added to the DEFINITY system to control and track WTs as they change location within the DWBS coverage area. The Mobility Manager directs all control and voice information to the appropriate Radio Controller for each WT. It is also responsible for the maintenance and administration of the DWBS and WTs.

---

**P**

**pre-origination dialing**

Dialing that occurs before dial tone is granted.

**portable part**

Part of the DWBS radio infrastructure that is portable (most notably, the WTs).

**post-origination dialing**

Dialing that occurs after dial tone is granted.

**Predictor**

Tool within the WiSE Expert Design System that uses site information as input to determine the optimal placement of the antennas within the DWBS.

---

**R**

**Radio Controller (RC)**

Circuit pack that provides the interface between the DEFINITY system and the radio subsystem. It controls one or more Wireless Fixed Bases.

**Radio Propagation Measurement Tool (RPMT)**

Tool within the WiSE Expert Design System that is used to provide basic radio measurements. The RPMT looks like a WT and, once it is administered, it can also initiate and receive phone calls. The RPMT can supplement the Predictor, serve as a troubleshooting device, and be used at site surveys.

**RC.** See **Radio Controller.**

**RPMT.** See **Radio Propagation Measurement Tool.**

---

**S**

**soft keys**

Buttons with labels that appear on an associated display; these labels and functions can change dynamically as the user performs functions and makes selections.

---

**T**

**TDMA.** See **Time Division Multiple Access.**

**Terminal Portable User Identifier (TPUI)**

Number returned by the fixed part to the WT during the Location Registration procedure.

**Time Division Multiple Access (TDMA)**

Radio access method for which each call uses a different time slot. TDMA permits multiple conversations per radio.

**TPUI.** See **Terminal Portable User Identifier.**

---

**U**

**UTAM**

Group charged by the Federal Communications Commission to coordinate the relocation of microwave incumbents out of the unlicensed spectrum (1910-1930 MHz) and to coordinate the deployment of unlicensed devices and systems in that spectrum.

## W

### **Wireless Fixed Base (WFB)**

Component that houses the fixed radio hardware. It provides the radio functions to transmit digitally to the WTs and to receive digital signals from the WTs. A WFB can support a maximum of four external Cell Antenna Units.



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