



CloudMax Reference Manual

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Table of Contents

Chapter 1 • Introduction	1
C5G Product Line Overview	1
ClientMax	1
CloudMax	1
CloudMax	2
Mobility Server	2
Proxy Server	2
Administration	2
Chapter 2 • Installation	1
Minimum Requirements	1
Installing CloudMax	1
Network Setup	2
Administrative Login	2
Configuration	3
Hosts	3
Mobility Server	3
Proxy Server	4
Handlers	5
Authorization and Renewal	6
Chapter 3 • Operations Menu	1
Overview	1
Monitor	1
Servers	2
Handlers	3
Devices	3
Network	4
Startup	4
Shutdown	4
Chapter 4 • Connect Menu	1
Overview	1
WebMax	1
Telnet	2
Secure	2
TN5250	2
TN3270	2
Chapter 5 • Reports Menu	1
Overview	1
Performance	1
Activity	1

Chapter 6 • Utilities Menu

1

Authorize	1
Snapshot	1
Analyze	1
Transfer	1

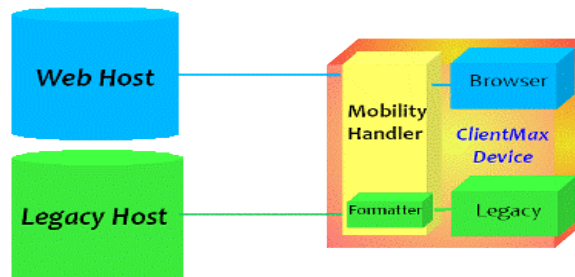
Chapter 1 • Introduction

C5G Product Line Overview

Connect products are devoted exclusively to making mobile devices as useful, efficient, and reliable as possible. Connect introduced the first generation of these products in 1990. C5G is the fifth generation, reflecting the latest in mobile connectivity technology.

ClientMax

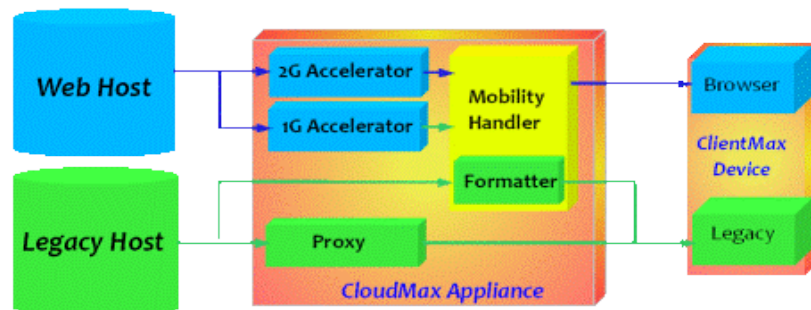
ClientMax is a client software platform for mobile devices. It provides the latest in web browser technology as well as all legacy emulations. ClientMax provides connectivity to



both web-based and legacy host applications. It can operate independently or through CloudMax appliances for increased performance and enhanced session stability.

CloudMax

CloudMax is a virtual appliance for cloud-based and on-premise servers. Used in conjunction with ClientMax, it delivers minimum response times by accelerating web applications and optimizing legacy sessions. It also provides session stability by



maintaining, and transparently re-establishing, interrupted wireless connections.

CloudMax

CloudMax is distributed as a virtual appliance downloaded from the Connect website. During the initial virtual machine startup, CloudMax automatically configures its network connections and starts its two primary servers, *Mobility* and *Proxy*.

Mobility Server

The mobility server provides *handlers* for ClientMax devices. The handlers provide a number of services that maximize performance, such as web acceleration for browser sessions and data optimization for legacy sessions. The handlers also provide many features that assist in adapting mobile devices to host applications, without modifying the applications.

The mobility server also provides session stability, ensuring that interrupted sessions are restored transparently. This important feature allows for the kind of casual connections that are prevalent in a the wireless environment of the mobile device world.

Proxy Server

The proxy server provides many of the features and capabilities of the mobility server, but does not require that the mobile device is a ClientMax platform. In addition to ensuring session stability, it supports a mobility handler for providing SSH to non-SSH devices, as well as a handler that provides web access for legacy emulations.

Administration

CloudMax is pre-configured to provide full functionality . However, certain parameters such as site-specific server names and addresses require some administrative attention during the initial installation.

The basic administrative interface to CloudMax is character based and is easy to use. This menu system does not require a mouse, and utilizes only a few standard keys for navigation and operation:

Arrow keys – The arrow keys provide navigation to menu items and sub-menus.

Enter – The enter key selects the current menu item.

Esc – The escape key serves the [BACK] function, leaving the current menu.

Chapter 2 • Installation

This chapter describes the steps for installing a CloudMax appliance.

Minimum Requirements

Installation of CloudMax requires a server meeting the following requirements:

- 1GB RAM
- 1GB free hard disk space available
- A virtual machine player

Installing CloudMax

The CloudMax appliance is available from the Connect web site download page. The downloaded file is a compressed archive. After extraction using a utility such as *WinZip*, run the local virtual machine player to start CloudMax. Once started, the initial signon screen will look something like this:

```
CloudMax = 9.0.1.1021

  The all-in-one virtual appliance for cloud-based & on-premise servers
* To setup the the network on this server, browse to:
  https://0.0.0.0:5480/

  or use the 'Configure Network' menu option below.

* To configure the CloudMax server, use the 'Login' option below, with:
  Login: crf
  Password: crf123

Licensed to ..... *DEMO ONLY* (30 minute session limit)
System ID .....
Devices this server ..... 0
Concurrent appliances ... 0

*Login
Configure Network
Set Timezone (Current:UTC)

Use Arrow Keys to navigate
and <ENTER> to select your choice.
```

Network Setup

CloudMax attempts to automatically determine its network address information during the initial startup and configure itself accordingly. However, this is not always possible, or may not suit local needs. In this event, select `Configure Network` from the signon screen:

```
Main Menu
0) Show Current Configuration (scroll with Shift-PgUp/PgDown)
1) Exit this program
2) Default Gateway
3) Hostname
4) DNS
5) Proxy Server
6) IP Address Allocation for eth0
Enter a menu number [0]: _
```

Set the IP Address, Default Gateway, Hostname, and DNS as required for the local environment. **Note** that the Proxy Server in this context is not related to the CloudMax Proxy server, so there is no need to configure this feature here.

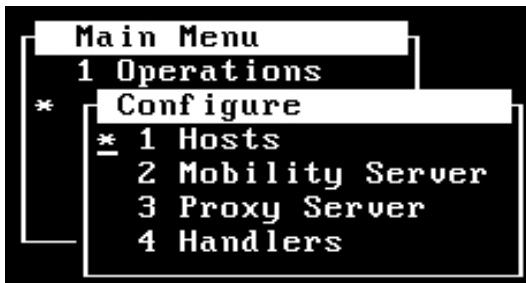
Administrative Login

The default CloudMax administrative login from the initial signon screen is `crf`, password `crf123`, resulting in the main menu screen:

```
cmax CloudMax
Main Menu
* 1 Operations
  2 Configure
  3 Connect
  4 Reports
  5 Utilities
<ESC>=QUIT <ARROWS>=MOVE <ENTER>=SELECT
```

Configuration

Select the Configure menu option from the main menu to access all CloudMax configuration parameters.



Hosts

The Hosts setup defines the name and address of CloudMax, as well as any other servers that CloudMax will provide access to:

TCP/IP Network Addresses					
Name		Address	Name		Address
[_localhostip6	] [::1] [[] [] [
[_localhost	] [127.0.0.1] [[] [] [
[_as400	] [12.235.112.68] [[] [] [
[_cmax	] [10.0.0.23] [[] [] [
[_debian	] [10.0.0.19] [[] [] [
[] [] [[] [] [
[] [] [[] [] [
[] [] [[] [] [

Mobility Server

The Mobility Server provides access to the various CloudMax mobility handlers. By default, ClientMax devices access the Mobility Server through port 1800, which provides a menu of configured handlers for the operator to choose from. More restrictive access is provided through the Direct Interface which maps a handler to specific ports. The default setup is shown here:

```

Mobility Server Setup

Status [ON ]

Node Name [cmax ]
IP Address [10.0.0.23 ]
IP Port [1800]

Log Level [1]
SAC Interval [300 ]
Session Restore [NO ]

Direct Interface

Port      Host Name      Port      Host Name
[1801]    [Webmax ]      [1805]    [Tn5250 ]
[1802]    [Telnet ]      [ ]       [ ]
[1803]    [Secure ]      [ ]       [ ]
[1804]    [Tn3270 ]      [ ]       [ ]

```

Log Level: Ranges from 1 to 9 and is useful for generating trace data that can be analyzed with the Operations Monitor and the Utility Analyze, both of which are described in their respective chapters.

SAC Interval: The interval, in seconds, between dumping of system activity and performance data collected by the Mobility server.

Session Restore: Determines the automatic session restoration after a mobile device drops a wireless network connection. Note that setting Session Restore to YES disables *HotKey* processing, which is the ability of a device to run multiple concurrent sessions.

Proxy Server

The Proxy server setup defines the servers and handlers available to mobile devices. Up to eight can be defined using the setup.

```

Proxy Server #1          Debug Level[off]

Ch  Status  Listen IP      Port      Host IP      Port      Options
1   [on ]    [10.0.0.23 ]  [1900 ]    [ ]          [ ]       [*]
2   [off]    [ ]          [ ]       [ ]          [ ]       [*]
3   [off]    [ ]          [ ]       [ ]          [ ]       [*]
4   [off]    [ ]          [ ]       [ ]          [ ]       [*]
5   [off]    [ ]          [ ]       [ ]          [ ]       [*]
6   [off]    [ ]          [ ]       [ ]          [ ]       [*]
7   [off]    [ ]          [ ]       [ ]          [ ]       [*]
8   [off]    [ ]          [ ]       [ ]          [ ]       [*]

Channel #1

Mobility Handler [*] [SECURE ]
Socket Type [TCP]
Session Type [Telnet ]
Telnet Playback [on ]
Proxy Timeout [0 ] (minutes to wait for reconnect, 0=forever)
TCP Keepalive [on ]
Wakeup [*] [ ]

```

Listen IP and Port: CloudMax server addresses and ports that the proxy listens for incoming telnet or browser sessions.

Host IP and Port: The server addresses and ports to which the proxy server will direct the incoming mobile devices.

Mobility Handler: The handler that will process sessions. Choose NONE for standard telnet connections, SECURE for ssh connections, and WEBMAX for accelerated browser sessions.

Socket Type: TCP for standard telnet sessions, and UDP for browsers. Note that WEBMAX uses TCP and telnet for the session to the mobile device.

Telnet Playback: In order to re-establish dropped telnet sessions transparently, this option must be set to on. This allows the proxy to handle the telnet negotiation from the mobile device so that the host is unaware of the casual nature of the session.

TCP Keepalive: Specifies the socket-level implementation of keep alive packets to maintain the host session.

Wakeup: After restoring a dropped session, the proxy will attempt to force the host server application to generate a screen refresh for the mobile device. The wakeup sequence is application dependent, and varies based upon the emulation. For convenience, pre-defined key sequences are available by selection.

```
VT [pf1 ] [1B:4F:50 ]
5250 [pf4 ] [34]
3270 [pf5 ] [F5]
Wakeup [00:0D:12:A0:00:00:04:00:00:03:01:01:34:FF:EF ]
```

For example, the above selection will generate the 5250 PF4 key with a data packet as shown. The XX:XX format represents the hexadecimal characters. Custom sequences may also be entered in the Wakeup field using the same format.

Handlers

The many mobility handler setup options vary depending on the type of session: legacy emulation (VT, 5250, or 3270) or WEBMAX. The default options pre-configured for each handler suffice for most applications and are described in detail in the ClientMax Reference Manual.

However, the host server address must be set for each handler by the CloudMax administrator in each of the defined mobility handlers that are made available to the mobile devices.

Mobility Handler Setup			
Menu Name	Handler	Active	Custom Options
[Webmax	] [WEBMAX	] [yes]	[
[Telnet	] [VTERM	] [yes]	[
[Secure	] [VTERM	] [yes]	[
[Tn3270	] [TN3270	] [yes]	[
[Tn5250	] [TN5250	] [yes]	[
[	] [NONE	] [no]	[
[	] [NONE	] [no]	[

Menu Name: Defines the name for this handler that will appear on the mobile device's menu at session startup.

Handler: Defines the handler associated with the menu name.

Active: Defines whether the handler (and menu name) is active and available to mobile devices.

Custom Options: Applies to custom-designed handlers and is not part of the standard CloudMax product.

Authorization and Renewal

CloudMax sessions operate for 30 minute intervals in demonstration mode. For production, the system must be authorized, requiring an authorization code from Connect. The menu system automates this process, transferring a request to Connect (or through an intermediary if the appliance does not have access to the public network).



Completing the authorization process requires a CloudMax key, which is emailed to the distributor or customer by Connect.

```
Authorization Request

System ID [bcsopdsh]
CloudMax Key [ _ ]
Reseller Name [ ]
Customer Name [ ]
Email address [ ]
Phone [ ]
```

After completing the form, it is automatically transferred to Connect, and the authorization response can be retrieved through the same menu option shortly afterward. The menu system provides options to make the transfer through an intermediate system in the event the public network is unavailable.

Annual renewals of the Continuum support subscription are made through the same menu system, as are requests for upgrades in the number of supported devices.

Chapter 3 • Operations Menu

Overview

The Operations menu allows the administrator to monitor active sessions, stop and start servers and handlers, and view live traces.



Monitor

The CloudMax monitor maintains real-time status of all servers and active sessions. There are three four available views:

Servers: These are the CloudMax servers. The Mobility and Proxy servers are self-explanatory. The HotKey server allows mobile devices to “hot key” between multiple concurrent sessions. The SNMP server processes the SNMP protocol, and the SMUX is the internal communication server.

Handlers: Each active ClientMax device receives at least one handler, and more if using hot key to manage multiple sessions. Therefore, there may be more than one handler per mobile device.

Devices: Every active mobile device is listed here by IP address, MAC address, and the server it is currently using.

Network: The network status of each active device.

The bottom row of the display provides the currently available options, which are selected by pressing the uppercase key in the selection name. The center of the display lists the available items, and the arrow keys select the item for further action.

Servers

Displays the current status of all CloudMax servers and a summary of active devices and handlers.

CloudMax Servers				
Server	Started	CPU Time	Devices	Handlers
<u>Mobility</u>	Oct29	00:00:00	2	9
Proxy	Oct29	00:00:00	1	1
HotKey	Oct29	00:00:00	-	-
SNMP	Oct29	00:00:00	-	-
SMUX	Oct29	00:00:00	-	-

10/30 15:11:20
[Servers] [Handlers] [Devices] [Network] [Trace] [starT] [stOp] [hElp] [Quit]

[Trace]: Switch to the live trace of the selected server.

[starRt]: Start the selected server. No effect if the server is already active.

[stOp]: Stop the selected server. No effect if the server is inactive. Note that the SMUX server, which handles communications between servers, cannot be stopped in this menu; instead it must be stopped using the Shutdown option in the Operations menu.

CloudMax Mobility Handlers				
Server	Handler	Trace	Started	CPU Time
<u>Mobility</u>	UT	000.128	15:06	00:00:00
Mobility	UT	000.128	15:06	00:00:00
Mobility	UT	000.128	15:06	00:00:00
Mobility	WebMax	000.128	15:06	00:00:00
Mobility	TN3270	000.128	15:07	00:00:00
Proxy	WebMax	-	15:07	00:00:00
Mobility	TN5250	000.024	15:08	00:00:00
Mobility	TN3270	000.024	15:08	00:00:00
Mobility	UT	000.024	15:09	00:00:00
Mobility	Secure	000.024	15:09	00:00:00

10/30 15:13:23
[Servers] [Handlers] [Devices] [Network] [Trace] [stOp] [hElp] [Quit]

Handlers

```
CloudMax Mobility Handlers
```

Server	Handler	Trace	Started	CPU Time
Mobility	UT	000.128	15:06	00:00:00
Mobility	UT	000.128	15:06	00:00:00
Mobility	UT	000.128	15:06	00:00:00
Mobility	WebMax	000.128	15:06	00:00:00
Mobility	TN3270	000.128	15:07	00:00:00
Proxy	WebMax	-	15:07	00:00:00
Mobility	TN5250	000.024	15:08	00:00:00
Mobility	TN3270	000.024	15:08	00:00:00
Mobility	UT	000.024	15:09	00:00:00
Mobility	Secure	000.024	15:09	00:00:00

```
10/30 15:13:23 [Servers] [Handlers] [Devices] [Network] [Trace] [stOp] [hElp] [Quit]
```

[Trace]: View the live trace of the selected handler.

[stOp]: Stop the selected handler.

Devices

```
CloudMax Devices
```

Server	IP Address	MAC Address
Mobility	10.0.0.128	00:1D:7D:2A:6E:78
Mobility	10.0.0.24	60:EB:69:89:DA:86
Proxy	10.0.0.128	00:1D:7D:2A:6E:78

```
10/30 15:19:12 [Servers] [Handlers] [Devices] [Network] [hElp] [Quit]
```

Each device is identified by its Server, IP address, and MAC address. It is possible for a single device to appear twice in this display if it establishes separate sessions with both the Mobility and the Proxy server.

Network

Displays the status of currently active network connections and the server port in use.

```
CloudMax Network Sessions
```

IP Address	MAC Address	Server	Socket	State
10.0.0.128	00:1D:7D:2A:6E:78	Mobility	1800	ESTABLISHED
10.0.0.128	00:1D:7D:2A:6E:78	Proxy	1900	ESTABLISHED
10.0.0.24	60:EB:69:B9:DA:86	Mobility	1800	ESTABLISHED

10/30 15:22:20
[Servers] [Handlers] [Devices] [Network] [hElp] [Quit]

Startup

The Operations menu option is used to manually start all servers. Because CloudMax automatically starts all servers during the boot-up process, this option is useful after manually stopping the server processes for administrative or maintenance purposes.

Shutdown

The Operations menu option used to manually stop all servers.

Chapter 4 • Connect Menu

Overview

The Connect Menu provides direct, full screen connections to network servers. It is useful for testing both the connection, the server application, and basic handler configurations. By default, most handlers are set to connect to a server on the public network at Connect. This server is named **as400**, and provides VT, 5250, and 3270 sessions.

The WebMax handler defaults to google.com through the formatter, for demonstration purposes. To test the secure handler, a properly configured SSH server must be assigned by the administrator if its use is desired.



All of the connectivity choices will as for the selection of a host name or a handler name, and all of the full screen emulators provide <ctrl><Y> for a help key.

WebMax

The default handler is Webmax. To change the characteristics of this handler, or to add a new WebMax handler, use the Handler option on the Configure menu.

Telnet

The telnet connectivity does not use a handler; instead, it provides a telnet session to any available server that supports telnet. Use the Hosts option on the Configure menu to add a host to the list.

Secure

The secure connectivity uses SHH, so the selected host – as defined in the Hosts option of the Configure menu – must support SSH.

TN5250

The default handler is Tn5250, which is directed to a Connect server on the public network. To change the characteristics of this handler, or to add a new TN5250 handler, use the Handler option on the Configure menu.

TN3270

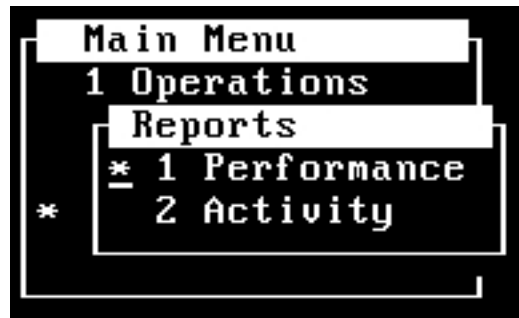
The default handler is Tn3270 which is directed to a Connect server on the public network. To change the characteristics of this handler, or to add a new TN3270 handler, use the Handler option on the Configure menu.

Chapter 5 • Reports Menu

Overview

The Mobility server is continuously collecting network performance and activity data, which is periodically updated and available to the Performance and Activity report programs. The data is also stored in comma-delimited format suitable for spread sheet import.

The frequency of this data update is determined by the SAC Interval setting in the Mobility option of the Configure menu. By default, the data is updated every 300 seconds (5 minutes).



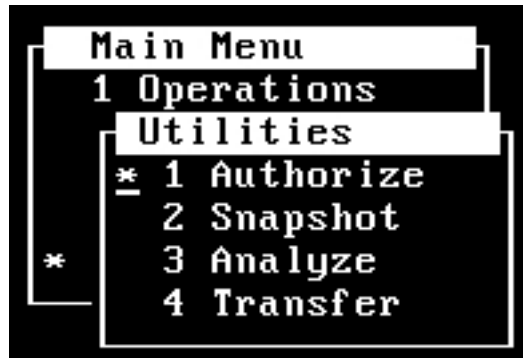
Performance

The performance report supplies transaction volume by overall response time distribution, as well as host application response time distribution. It also provides transaction distribution by transaction size.

Activity

The activity report supplies a traffic summary by time of day, including including transmission errors

Chapter 6 • Utilities Menu



Authorize

The Authorize menu option handles initial CloudMax authorization, Continuum subscription renewals, and changes to the number of mobile devices authorized for the appliance.

Snapshot

The Snapshot menu option collects all of the important system information including handler and server traces, archives them into a single compressed file, and automatically transfers the file to Connect, or to a destination of the administrator's choice.

This capability allows off-site technical support engineers to fully analyze and troubleshoot system problems.

Analyze

The Analyze menu option provides access to all system trace files with helpful search and filtering tools to assist in quickly identifying problems and performance issues.

Transfer

The Transfer menu option provides an easy to use interface for collecting files, archiving them, and uploading them to other sites, including Connect.

