

WMS_FLEX™ System

Release R01.08.00

Series: WMS FLEX™

System Version: R01.08.00

Customer Release Notes

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1 SCOPE

This document contains the system release notes for the current release of the WMS-FLEX System. This document describes the contents of WMS-FLEX (R01.08.00), released for commercial use. It includes major feature additions, changes incorporated in this release, possible defects and known errors, installation notes and other information pertaining to the system.

It is recommended that all sections should be reviewed for information that may impact your current version.

1.1 Versions Released :

WMG : R3.3.0.1
RF-C! : V3.6.0
C! : V1.3.1
RF-B! : V1.2.0 (Same as previous release)
Nucleus: V4.030 (Same as previous release)
Libretto : V1.0.0

MIB Versions:

WMG: MibVer-1
RF-C!: MibVer-3
C! : EvMibVer-3.1
RF-B!: MibVer-7

2 SYSTEM VERSION DESCRIPTION

Welcome to Motorola's Wireless Messaging System (WMS) FLEX. This section describes the software sub-systems that compose the WMS-FLEX System.

2.1 WMG-ADMINISTRATOR

The WMGTM system, referred to as the Wireless Message Gateway System, receives messaging requests and routes the messages to their destinations through the Radio Frequency Conductor (RF-C!) sub-system, through other gateway systems, or manages the message internally (for example - Voicemail and Mailbox). The WMG-Administrator is made up of 4 components, they are: the Operation Maintenance Center (OMC), Universal Communications Controller (UCC), Call Processor (CP) and the File Server (FS). Each component serves a unique purpose.

2.2 RF-CONDUCTOR!

The RF Conductor! (RF-C!) is the controller for advanced messaging and one-way paging in the Paging Systems Group (PSG) product line. The RF-C! batches, schedules, encodes, decodes, multiplexes, and demultiplexes the data required by several different pager types through the use of progressive scheduling algorithms and queuing techniques.

2.3 CHOREOGRAPHER!

The Choreographer! is the primary management platform for the Advanced Messaging Infrastructure. The Choreographer! is responsible for minimal control, alarms, statistics, configuration, and performance management.

2.4 RF-BATON!

The RF-B! one-way transmitter controller provides an interface between the RF-C! controller and the Nucleus transmitter. The RF-B! one-way transmitter controller also provides synchronization timing for the Nucleus transmitter using a timing reference from the Global Positioning System.

2.5 NUCLEUS!

The Nucleus paging station converts data received from RF-B! transmitter controller into modulated radio frequency (RF) energy for transmission to the pagers.

3 NEW FEATURES AND ENHANCEMENTS

3.1 WMG: Features/Enhancements Introduced in: R3.3.0.1

3.1.1 New Features:

- * IPNP Multicast(IGMP)
- * OTAP Secure Registration
- * Maildrop without MSN
- * Alarm call flow
- * Call count barring
- * Canned message
- * SS7-TUP & ISUP, SS7 redundancy
- * ThreeSpans in one chassis
- * 500K Subscribers w/o SS7
- * One number access N to one (TSI)

3.1.2 Enhancements:

No new enhancements.

3.2 RF-C!: Features/Enhancements Introduced in: v3.6.0

3.2.1 New Features in Version 3.6.0

3.2.1.1 Support for Secure Messages

RF-C! supports FLEX secure instructions, including the Registration Acknowledgement message and the Registration Instruction message.

3.2.1.2 OPP Multicast

RF-C! supports OPP multicast. The RF-C! delivers encoded OPP data packets over a TCP/IP network with a multicast address representing destinations. Baton!s joining the multicast group receive the multicast message and send out messages over the air to the subscriber units.

3.2.1.3 Hot reconfiguration of Frame Offset and System Collapse.

RF-C! has the ability to change the FLEX frame offset and FLEX System Collapse values without requiring a RF-C! restart. The changes will begin to take effect as soon as the new values are loaded from the Choreographer!. This capability has also been added for the configuration items MaxCarryOn and MaxCarryOnRoam.

3.2.1.4 MS-H to RF-C Multicast

The MS-H has the ability to send multicast IPNP traffic to the RF-C!.

3.2.2 Enhancements in version 3.6.0

3.2.2.1 Increase in TCP Re-Transmit Interval

Previous versions of the RF-C! set this parameter to 500ms. This value, particularly in a V-SAT environment, would have caused retransmission of TCP packets. The new setting is 10 seconds; this value will allow adequate time for TCP to get its response.

3.3 C!: Features/Enhancements Introduced in: V1.3.1

3.3.1 New Features

3.3.1.1 Network Element Control Application

The Network Element Control Application (NECA) can be used to view and modify parameters for the RF-B! and Nucleus.

This application consists of two parts: the server portion and the GUI portion. The servers start automatically when the system is booted and run from a shell script called runservers.sh located in /usr/choreographer/bin/Neca (please see defect # AMGfw19173 in Section 5.3 for information pertaining to actions required to start the servers on system boot.). The GUI portion is also launched from a shell script called runtreen.sh and is located in the same directory. The GUI portion may also be launched from the HP-Openview PagingApps menu.

3.3.2 Enhancements

C! v1.3.1 includes enhancements in terms of the new feature listed above, as well as a number of fixes to known problems, and several enhancements to the Historical Statistics Display Application.

Note: Historical Statistics will work only if the time zone is set as CTT in the startup script for HistoricalStatistics which is HistStats.sh in /opt/HistStats/bin.

3.4 RFB: Features/Enhancements Introduced in: V1.2.0

No features or enhancements added to this release.

3.5 NUCLEUS: Features/Enhancements Introduced in: V4.030

No features or enhancements added to this release.

4 CHANGES INCORPORATED

This section identifies the changes incorporated into this system release since the previous Release R01.07.00. This section does not apply to the initial system version. The list below reflects the Class 1 and 2 problem reports that have been resolved.

4.1 WMG-ADMINISTRATOR

WMG: Summary of changes incorporated in this release:

Bug AMGfw22623

System Version: R01.08.00 W

Xloadimage source code has year 2000 problem.

***** Description *****

Please fix the potential miss use of xloadimage and caused year 2000 problem. According to the source code analysis, one can cause this problem using this program by loading 'mcidas' format files. Line 52 of mcidas.c has the potential problem.

Bug AMGfw17667

System Version: R01.06.01 W

The UCC RAM was insufficient for bulk call testing.

***** Description *****

Scenario: When beginning the bulk call testing of the ULTRA WMG the system was tested on one span for several hours. When the second span was added to the test the UCC's failed. Giving dialogic error messages.

Issue: The problem was found to be the amount of RAM onboard for the UCC. The bulk call test needs a minimum of 48 megs of RAM to perform bulk call testing of more than one span and the ULTRA was received from the factory with only 32 megs of RAM. Sixteen megs were added to the UCC and the test ran without error.

Bug AMGfw17666

System Version: R01.06.01 W

Media converters improperly terminated

***** Description *****

Scenario: Ultra system in SITG was performing inconsistently. The internal network was failing between the UCC and the OMC. Error message was NFS connection between OMC and UCC was bouncing up and down.

Issue: Isolated problem to media converter A. After pulling internal media converter the jumper for termination was found to be on. With the cable

terminators being on this caused the network to be terminated twice and result in the erratic connection between the OMC and UCC.

Bug AMGfw16166

System Version: R01.06.01 W

Insufficient drives in file server

***** Description *****

File server has only 3 hard drives. This is noted to be insufficient for the amount of space needed for subscriber files. This is a test system to test a large subscriber based Chinese city. Development group said 5 to 6 drives were needed.

Bug AMGfw19209

System Version: R01.06.00 W

Subscriber Record can not be deleted.

***** Description *****

While the MPT customer was defining subscribers durring a training excercise one subscriber record could not be deleted. The record could be displayed and modified. The error message displayed on the GUI was -196638 MSG is missing needed data.

Other subscriber records could be deleted. The customer (one of their engineers) expressed concern that this may be part of a much larger hidden problem. The customer student has requested a defect analysis stating the cause and recovery method for this type of problem.

Note 7 OMC sessions were taking place at the same time. Students were defining blocks of 10 subscribers and using search and replace GUI to modify records. Each of the students were using different ranges of subscriber numbers. The class room WMS was configured to simulate the China 22 city system. The problem is still in the system if the engineering team wishes to gather additional information. I have asked the student/customer to not access this subscriber record again to allow our engineering team to analyse the problem.

Bug AMGfw18121

System Version: R01.06.00 W

The ERRORLOG on OMC is filling up fast with ERRORS

***** Description *****

Enter a description of the required change request:

Software: R3.1.0.2
System: Fitel WMG

Mac 3, 1998

Issue: It appears that everytime a OAP call is made there are a ton of warning message sent to the ERRORLOG file on the OMC.

Problem: Everytime a caller places a call to the OAP there are about 6 different warning message that are send to the ERRORLOG File. If there were only 6 message sent would not be a problem, but Fitel will fill all 8 ERRORLOGs and then have it rollover, so you will lose any real Error rom the first part of the day.

Bug AMGfw19140

System Version: R01.07.00 W
 OMC Errorlog receiving many vru errors

***** Description *****

Enter a description of the required change request:

Software: WMG R3.1.1.0

Scenario: Running China script with E1 bulk call generator connected to 3 span UCC. Sending numeric message to various subscribers.

Symptom: The OMC Errorlog is being filled with vru 'receive error on msg.' and other vru messages. It is loading the errorlog to capacity and then error log begins another file for that day and consumes disk space on the OMC.

Solution: Find the cause for these messages and correct it.

Bug AMGfw20388

System Version: R01.07.00 W
 Trunk Statistics GUI show over 4M Value

Bug AMGfw18101

System Version: R01.07.00 W
 Call hold time includes system's termination time

***** Description *****

Test: WMS.PL.029 CDR Call Hold Time

Ver: R3.1.1.0

Bug AMGfw17682

System Version: R01.06.01 W
 Ultra WMG system cdr.proc causing core dump of OMC

***** Description *****

Enter a description of the required change request:

System: Ultra WMG r3.1.0.2

Scenario: Ultra system was load tested with Ameritech Am2e bulk call

generator beginning Friday 2/27. System ran all weekend with volume in excess of 2 million calls. Sunday morning 3/1 the system was running the cdr.proc process as scheduled at 01:00 when core occurred. On the following Monday the core happened at the same time and over wrote the existing core file.

Saved the core file on the Ultra system (Hunan) in the SITG under /oldcore, did not copy to DDTS due to the size of the file.

Bug AMGfw20360

System Version: R01.08.00 W

Secure Cancel Instruction request does not get sent

***** Description *****

Enter a description of the required change request:

System Requirement:WMS.PL.011

System Test Case:SYS.PL.011

Software Version:WMG 3.3.0.0g

Test System:Shanghai,Beijing

Problem: Secure Instruction Cancellation gets requested by msgServer but does not get sent by nwServer to RFC for completion if Service Area roam into is down.

Behavior: Secure Instruction registered by system (not by pager). Cancellation by GUI gets accepted by msgServer but not by nwServer. Cancellation by call flow get prevalidate error by msgServer. Delivery Area in both case gets removed from subscriber. Message never sent through to RFC.

Bug AMGfw16853

System Version: R01.06.01 W

tntpServer does not respond if tserver port fails

***** Description *****

Enter a description of the required change request:

When the tnpp port on the terminal server is brought down or the terminal server is rebooted the tnppServer should begin polling the ports after a one minute delay. The tnppServer fails to restart polling which keeps the port from coming back on line. Showed this to Eric Luong who showed me the work around is to stop and restart tnppServer from GUI menu under System Control Process.

4.2 RF-CONDUCTOR!

RFC: Summary of changes incorporated in this release:

Bug AMGfw17935

System Version: R01.06.01 W

EVMIB 3.0 doesn't support China.

***** Description *****

EVMIB 3.0 doesn't support China on RFC 3.5.1.

Also, we need this prior to RFC 3.6.0 realese.

Bug AMGfw20677

System Version: R01.08.00 W

RFC doesn't support secure instruction!

***** Description *****

System Requirement: WMS.PL.002

System Test Case: SYS.PL.002.1

Software Version: RFC 3.6.0a

Test System: all cities

Problem: R01.0.8.00 requirement calls for secure instruction, but RFC 3.6.0a does not support it. Block information word is correct but message code word is not attached.

Behavior: WMG sends admin binary message containing Hex 3B Op code for a ";" along with the corresponding SSIDs and NID. RFC show a secure msg is added for a specific cycle and frame. The flex frame in the signal pro decodes the correct 3 Vector type=000, t1t0=01, and wrong Op code Hex=01 with no other information.

Suggestion: RFC needs to input the correct information from the WMG or delete the requirement from this system release.

Bug AMGfw20679

System Version: R01.08.00 W

RFC doesn't support secure cancellation

***** Description *****

System Requirement: WMS.PL.011

System Test Case: SYS.PL.011.1

Software Version: RFC 3.6.0a

Test System: all cities

Problem: R01.08.00 requires secure 0 sequential cancellation but RFC R3.6.0a does not support this.

Behavior: WMG sends admin binary cancellation (msg length=11). RFC sends a secure msg for specific cycle and frame. Signal pro decodes frame with correct Vector type=000 t1t0=01 and no Op code or "0" sequential cancellation message. (Note: also see AMGfw20360)

Suggestion: Same problem as secure instruction. RFC needs to support secure cancellation or move requirement to next release.

Bug AMGfw20492

System Version: R01.08.00 W

RFC is not sending Operation Code for Registration Acknowl

***** Description *****

Software Version : RFC V3.6.0a

Test system : Beijing

Problem : RFC is not sending Operation Code for Registration Acknowledgement-Secure Message.

Behaviour : Registration Acknowledgement is sent to the pager. But RFC is not sending Operation Code for Registration Acknowledgement (which should be 3d in hex).

Bug AMGfw17897

System Version: R01.06.01 W

Support for Binary blocking length of 1

***** Description *****

Enter a description of the required change request:

While developing the feature for FLEX G1.8 Secure Registration Instruction in the WMG, it was discovered that the RFC did not support a binary blocking length of 1 (only a blocking length of 8). According to the FLEX G1.8 protocol, both Secure Registration Instruction is a type 1 (t1 t0 = 0 1) is for Binary Defined Fields payloads. This type of secure message has an inherent blocking length of 1 since there is no homogeneous character structure to the payload (e.g., sequence of 8-bit bytes). Since no blocking length field exists in the IPNP(WMtp) protocol for Admin(Secure) binary messages, the RFC must derive the blocking length from the secure message type provided by the MS-H. In this case, both the secure type 1 and 2 for FLEX protocol messages require a binary blocking length of 1.

In order for the FLEX Registration Instruction to be properly supported by the system, the RFC must be able to support a binary blocking length of 1. This functionality is scheduled for release to the customer in the R system release.

The RFC has also committed in the same release to support NID and SSID Change Instructions which are also of secure binary type 1 (Defined Fields). It is undetermined how the RFC intended to support these features without supporting a binary blocking length of 1.

4.3 CHOREOGRAPHER!

Choreographer!: Summary of changes incorporated in this release:

NECA - Network Element Control Application

4.4 RF-BATON!

RFB: Summary of changes incorporated in this release:

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Bug AMGfw17609

System Version: R01.06.01 W

Baton PPP incompatible with ISG router 5.1 sw

***** Description *****

Enter a description of the required change request:

The latest SITG Baton SW (1.1.2) locks up & subsequently resets at a well defined rate of once every 8 hours 38 minutes.

Testing in SITG with various combinations of Baton & ISG router versions (present & previous versions of both) have shown that the Baton will only reset if:

1. The ISG router code is version 5.1
2. The link is PPP & not ethernet, that is, ethernet works fine.

Analysis demonstrated that the Flex baud rate, or any other part of the Flex payload was causing the reset.
(Changes were made at the RFC with the same reset problem)

Further analysis shows that the only PPP related difference in the router firmware is a periodic 'LCP_ECHO_REQUEST' that is sent to the Baton with every Flex Frame packet (1.875 seconds).

Previous versions of Baton code were tried in conjunction with ISG 5.1 code with the same predictable reset results. Specifically,

RFBC 1.1.1 & RFBC 1.1.0 versions were tried.

When the previous version of ISG code was tried (4.9.6), none of the versions of Baton code reset for over 24 hours.

5 POSSIBLE PROBLEMS AND KNOWN ERRORS

The following Problem Change Reports represent possible problems that need to be substantiated further, and known errors. After these issues are confirmed as errors, the problem reports will be corrected, tested and closed by the System Change Control Board (CCB) or System Integration Testing. Corrections will be scheduled for future releases.

If you need further descriptions on a particular problem report, please contact the One-Call department at 245-2000.

5.1 WMG-ADMINISTRATOR

WMG:Summary of possible problems and known errors:

Bug AMGfw22633

System Version: Unknown

Temporary Barring cannot be cancelled.

***** Description *****

Taiwan Call flow:

Temporary barring can not be cancelled through the phone because a time gap of 2 seconds is not available to enter the cancel function. It is unclear as to whether this occurs with both the system and the custom prompt.

Workaround: Customer is going to fix problem by recording new voice prompt to give them the necessary 2 second window.

Bug AMGfw22506

System Version: R01.08.00c

SS7 installation procedure will not extract ss7-tar_file

Bug AMGfw22356

System Version: R01.08.00c

HomeID, HomeIndex of 0 is not validated correctly.

Bug AMGfw21861

System Version: R01.07.00 W

Subscriber storybook changes for unknown reason

***** Description *****

Fitel reported that when some of their subscribers complain that their pager isn't working, they noticed that this caused by the TMG flags in the storybook being set. The only provisioning interface to the WMG is the billing

system, the suspicion is that the billing interface is somehow setting the TMG flags.

We need to request a list of the commands that Filel uses from their billing system, so we can understand is any of the commands can cause the TMG flags to get set randomly.

Bug AMGfw21859
System Version: R01.07.00 W
Voicemail notification delay

***** Description *****

Fitel reported that there was a 5 min delay in their voicemail notificatio page. After review of the system we noticed that the CP and OMC were carrying different times from the RFC, they were approx 3 - 4 min off of the RFC time. However, by the time the analysis was complete and instruction given to the Field engineer to correct the condition, the times on CP and OMC were already corrected.

Fitel says that some of their customers are still complaining about delayed voicemail notification, even after the times were sysnc'd

Bug AMGfw20358
System Version: R01.08.00 W
alarm server table not fully updated in alarm viewer

***** Description *****

System Requirement: n/a
System Test Case: installation and setup
Software Version: WMG 3.3.0.0g
Test System: Shanghai

Problem: Alarm server table was not fully updated with new alarm data. Any alarm data already in the table did not get updated to the changed data. Any new alarms were added to the table but the old alarms did not get changed.

Behavior: This was seen upgrading WMG 3.1.0.2 to 3.3.0.0g

Suggestion: Either add procedure to delete old alarm table and load the new alarms or have the script not detect ones already there.

Bug AMGfw21857

System Version: R01.07.00 W

WMG statistics does not correlate to ACD

***** Description *****

Fitel observed that the Harris ACD was reporting 92 as the # of invalid OAP calls and the WMG was reporting 600. Fitel believes that the statistics reported by WMG is incorrect, collected statistics over a few days from the WMG and the Harris was supplied to Janus for review.

Bug AMGfw21858

System Version: Unknown

Voicemail deposit option isn't always recognized

***** Description *****

Fitel reported that occasionally the WMG does not recognize the digit #1 when entered to the menu prompt that says press 1 for voicemail deposit, 2 for

Whenever the WMG is in this mode after 1 is entered the menu prompt is replayed, this condition occurs each time the 1 is entered. Fitel also reported that all other key (2,3, ...) are recognized just the #1 key for voicemail deposit.

5.2 RF-CONDUCTOR!

RFC: Summary of possible problems and known errors:

Bug AMGfw20784

System Version: R01.08.00 W

RFC couldn't support both IPNP and OPP multicasting.

***** Description *****

Enter a description of the required change request:

Software Version : RFC V3.6.0a

Test System : Beijing

Problem : RFC couldn't support both IPNP and OPP multicasting at the same time.

Behavior : When the system was tested for IPNP multicasting with the

IP address 225.0.0.2, it worked good. Likewise it was good for OPP multicasting with the IP address 227.0.0.1. But as soon as the system was configured for OPP multicasting, the IPNP multicasting didn't work. So the RFC has to be configured every time for the type of multicasting tested either IPNP or OPP.

Bug AMGfw22569
System Version: R01.08.00c
Clientstatus doesn't get updated correctly in RFC tracer.

Bug AMGfw20851
System Version: R01.08.00 W
RFC doesn't truncate the message, but deletes it.

***** Description *****

Software Version : RFC V3.6.0a
Test System : Shanghai
Problem : Rfc doesn't truncate the message that exceeds the Flex Protocol's maximum message length.
Behavior : When the message length exceeded the Flex protocol's maximum message length, RFC deleted the message. But it has to truncate it and send the message out. The event log says that, it is invalid numeric length.

Bug AMGfw21148
System Version: R01.08.00 W
Rfc doesn't report the correct count of code words.

***** Description *****

Software Version : RFC V3.6.0a
Test System : Beijing
Problem : Rfc doesn't report the correct count of codewords in the stats file.
Behavior : Numeric message of length 12 was sent (with short address) to the RFC. The total message count was 718, which should be equal to 3590 codewords. But the codeword count was 114880.

Bug AMGfw20883
System Version: R01.08.00 W
RFC doesn't insert arbitrary Message Sequence Number.

***** Description *****

Software Version : RFC V3.6.0a

Test System : Shanghai
 Problem : Rfc doesn't insert arbitrary message sequence number for subscribers with message numbering disabled.
 Behavior : When the MSN is disabled for a particular subscriber, Rfc is not inserting an arbitrary MSN with the message. But the 'R' bit is set to zero.

Bug AMGfw22525
 System Version: R01.08.00c
 RFC Does Not place GPS Rx in "HOLD" state

Bug AMGfw22420
 System Version: R01.08.00b
 RF-C! does not detect RAID going off-line (very quickly)

Bug AMGfw22618
 System Version: R01.08.00c
 RFC Losses "initabb" File

5.3 CHOREOGRAPHER!

Chor: Summary of possible problems and known errors:

Bug AMGfw19173
 System Version: R01.08.00
 NECA will not lauch without first starting the RunServers application.

***** Description *****

Software Version :C! V1.3.1
 Test System :Beijing
 Problem : NECA can not launch without first starting RunServers from command line.
 Behaviour : Before launching NECA the user must enter the directory "/usr/choreographer/bin/Neca" and type the command **"/runservers.sh"**. The user can then open NECA from HPOpenview.

Bug AMGfw20772
 System Version: R01.08.00 W
 Choreographer doesn't clean(flush) the buffer.

***** Description *****

Software Version :C! V1.3.1
 Test System :Beijing
 Problem :Choreographer is not flushing the buffer.
 Behaviour :C! was receiving traps from Router for every second. At

that time the download to RFC was not successful. It gave the message trapd process terminated till the download status window shows that the download wasn't successful. Audry noticed all the events that appeared during the download. This behavior changed as soon as the snmpMA information from the router was disabled.

Bug AMGfw22355
System Version: R01.08.00c
OID received in C! is not mapped to a specific event.

Bug AMGfw22354
System Version: R01.08.00c
When downloading a client from C!, default password is not

Bug AMGfw22255
System Version: R01.08.00c
Neca GPS Report Group Class

***** Description *****

When using Neca for GPS Report Group query, Neca is inconsistant in getting the information.

The error is:

BpUtilRfb_V1\$rfbGps Report Grp Class err# 7009 null

If monitoring running application, the query indicated that the Response message would have been too large Errindex1.

While this is occuring, Neca will query GPS config group.

This happens over ppp or enet.

Bug AMGfw22254
System Version: R01.08.00c
Neca Network Config parameter

***** Description *****

This problem was found when trying to configure the network parameters of the B!.

If one changes the Sub-Network address for example:

from 255.255.255.0 to 255.255.255.252

Neca sends data and changes the B! network ip (R/W 705) to 255.255.255.252

Bug AMGfw21742
System Version: R01.08.00b

Frequency change via Neca Fails

***** Description *****

When in Neca and configuring the Nuc frequencies, Neca responds successful however the changes are not made in the Nuc.

Bug AMGfw21740

System Version: R01.08.00b
Neca application conflicts with netmon

***** Description *****

When one starts the Neca application, Theater can not run. Netmon stops running. It does not matter when theater is opened.

Bug AMGfw21817

System Version: R01.08.00c
Neca "Station Control"

***** Description *****

Station Control Paging Access Disabled when selected Neca responds successful, however state does not change at B!.

Bug AMGfw21832

System Version: R01.08.00c
Neca "Station Config" core dump

***** Description *****

Neca "Station Config", when used the "clear all" and configured, caused a core dump. Have file on sun workstation /coredump.6-21.

Bug AMGfw21159

System Version: R01.08.00 W
C! not retrieving all the stats files from Rfc.

***** Description *****

Software Version : C! V1.3.1
Test System : Beijing
System Requirement : WMS.PL.042
Problem : Choreographer is not retrieving all the files from RFC
Behavior : While testing Historical statistics, C! didn't retrieve the previous 24 files from Rfc. It skips some files.

5.4 RF-BATON!

RFB : Summary of possible problems and known errors:

Bug AMGfw22619
System Version: R01.08.00c
RFB! 5 Mhz reference oscillator drifts

Bug AMGfw22295
System Version: R01.05.00 S
Missed Pages with Baton! v1.1.2

Bug AMGfw22822
System Version: R01.08.00c
B! / Nuc Interface lock-up

Bug AMGfw22826
System Version: R01.08.00c
No Paging Disable "cleared" sent

5.5 NUCLEUS!

NUC: Summary of possible problems and known errors:

Bug AMGfw22824
System Version: R01.08.00c
Nucleus Synthesizer Lock Fail Alarm Not Sent To B!

6 BACKUP AND RESTORE

6.1 WMG-ADMINISTRATOR

6.1.1 Backups:

An automatic back is performed by the WMG daily and in located on the file server. A tape backup should be performed also. Put a blank tape in the tape drive and type the following:

```
cd /usr/local/wmg/config/Utilities/WMGsnapshot/  
WMGsnapshot  
'c' for create  
Eject tape
```

To save time backup the following files and move them to the netapp for quick access: For instructions see below:

```
/usr/local/wmg/config/wmtp.cfg  
/usr/local/wmg/config/wmtp.pipes  
/usr/local/wmg/config/wmg.ini  
/usr/local/wmg/config/RM_RUN.ini  
/usr/local/wmg/config/ConfigTable.dat  
/usr/local/wmg/data/*.cfg  
/etc/ntp/ntp.conf  
/wmgucc/TSpan  
/usr/local/wmg/config/billsys.login  
/.mwmrc copy to mwmrc  
/wmgucc/ucc/vru/config/chan_data/chan_data.X  
/etc/hostname.le0  
/etc/hostname.qe0  
/etc/hostname.qe1  
/etc/inittab  
/etc/default/login  
/etc/nodename  
/sbin/rcS  
/etc/hosts  
/etc/netmasks  
/etc/inetd.conf  
/etc/rc2.d/S72inetsvc  
/etc/init.d/inetinit
```

6.1.1.1 Backing up files to a directory :

To backup files to another directory (i.e /wmgmail/save_dir) :

The following procedure needs to be followed

```
cd /wmgmail/  
mkdir save_dir  
cd /wmgmail/save_dir  
cp /etc/hostname.le0 .
```

cp /usr/local/wmg/config/wmtp.pipes .

repeat this process for all the above mentioned files.

6.1.1.2 Backing up files to a Tape :

To backup the above mentioned files to a Tape the following procedure should be followed :

- i) Insert the tape into the local system tape drive
- ii) Execute the following command :

tar -cvfh /dev/rmt/01b /etc/hostname.le0 /etc/hostname.qe0 (enter all the files specified)

press **return**

All the specified files will be saved to the tape.

6.1.2 RESTORE :

6.1.2.1 Restoring Files from the /home/rfc/save_dir directory:

To restore the files from the /home/rfc/save_dir do the following :

cd /wmgmail/save_dir

cp hostname.le0 /etc/hostname.le0

cp hostname.qe0 /etc/hostname.qe0

.

.

cp wmtp.pipes /usr/local/wmg/config/wmtp.cfg

6.1.2.2 Restoring Files from the Tape :

To restore the files from the tape do the following :

Insert the tape into the local system tape drive

Execute the following command :

tar -xvfh /dev/rmt/01b

All the files stored in the tape will be restored to their respective directories

6.1.3 WMG Informix Database Backup and Restore

6.1.3.1 Introduction

Database backup is handled automatically by an application called informixMon. The informixMon application monitors informix and places archives and backups of logical logs into directories. This is all done automatically and requires no intervention by the user.

6.1.3.2 Backup Data File

By default, informixMon puts archives and logical log backups into three different directories. These directories are defined in the file \$WMGHOME/backup.dat. By default, these directories are /wmgmail/backupX where X=1, 2, or 3. The informixMon application rotates between these three directories in a round robin fashion. Each directory is used for one level 0 archive and one day's worth of logical logs. Additionally, a copy of informix's configuration file is put in the current directory after the archive is created. By default, the informixMon application switches to a new directory at midnight.

The backup data file contains valuable information for performing manual database restores. Specifically, each line in the file contains at least three tokens. The first token is the path to the backup directory. The second token is the status of the directory; **G** for good, **A** for an archive error, and **B** for a logical log backup error. The third token indicates whether the directory is current or not; **1** for current and **0** for not current. After these tokens there may or may not be a time stamp of the form *mm dd yy hh:mm:ss*. If there is no time stamp, then the directory has never been used by the informixMon application.

If the entry in the backup data file has a status of **G**, then the directory can be used to restore the database. If the entry in the backup data file has a status of **A**, then the directory cannot be used to restore the database. If the entry in the backup data file has a status of **B**, then the directory can be used to restore the database, but it will not contain all of the most recent changes. For more details, see the section titled "Restore".

6.1.3.3 Backup Configuration File

The backup configuration file allows a user to change certain operating parameters of the informixMon application. The following table shows the entries that are valid in the backup configuration file. Invalid entries are ignored. By default, this file is located at \$WMGHOME/backup.cfg. This file is read once at the start-up of informixMon. Modifying the file after informixMon has started will not alter the behavior of informixMon.

Table 1:

Token	Example	Meaning
numDirs	numDirs 3 (default)	Number of backup directories in use by informixMon.
logFiles	logFiles 3 (default)	Number of logical logs in use by informix. Should match the informix configuration parameter LOGFILES .
tapeDev	tapeDev /usr/informix/archive_tape_dev (default)	Should match the informix configuration parameter TAPEDEV .
ltapeDev	ltapeDev /usr/informix/backup_tape_dev (default)	Should match the informix configuration parameter LTAPEDEV .

Table 1:

Token	Example	Meaning
switchHour	switchHour 0 (default)	The hour at which a switch to the next backup directory should be made. Valid values are the number of hours since midnight; 0-23.
switchMin	switchMin 0 (default)	The minute at which a switch to the next backup directory should be made. Valid values are minutes after the hour; 0-59.
noArchive	n/a	Turns off automatic archive of database. Note that noArchive implies noBackup.
noBackup	n/a	Turns off automatic backup of logical logs. Note that logical logs are dumped to /dev/null.

6.1.3.4 Archives

In order to begin automatic backup of the database, a level 0 archive of the database must be taken. This archive is a baseline that provides a beginning point for restoration of the database. The informixMon application automatically performs a level 0 archive of the database in the four following cases:

1. The informixMon application starts and there is no level 0 archive in the current backup directory. In this case the level 0 archive is put into the current backup directory.
2. The informixMon application detects that a switch to the next backup directory is needed. In this case all the files in the next backup directory are deleted and the archive is put into the next backup directory. After successful completion of the archive, the next backup directory is made current and its time stamp is updated.
3. The informixMon application detects that the current backup directory has a status of **A**. In this case all the files in the current backup directory are deleted and the archive is put into the current backup directory. After successful completion of the archive, the current backup directory's time stamp is updated.
4. The informixMon application detects that the current backup directory has a status of **B**. In this case all the files in the next backup directory are deleted and the archive is put into the next backup directory. After successful completion of the archive, the next backup directory is made current and its time stamp is updated.

If an error occurs while the system is trying to create a level 0 archive, then the informixMon application enters a special state where it continues to monitor the logical logs. Also, the current backup directory is marked with a status of **A** and an alarm is raised. As soon as the logical logs become full, the informixMon application dumps them to /dev/null.

The dumping of logical logs continues until the alarm is cleared or the informixMon application is restarted and the informixMon application is able to create a level 0 archive.

6.1.3.5 Logical Log Backups

Logical logs represent the incremental changes that have been made to the database since the level 0 archive was taken. To restore a database, the level 0 archive along with its associated logical logs are needed. When the informixMon application detects that a logical log is full, it stores it into the current backup directory.

If an error occurs while attempting to create a logical log backup, then the informixMon application enters a special state where it continues to monitor the logical logs and an alarm is raised. As soon as all of the logical logs become full, the informixMon application dumps them to /dev/null and the current backup directory is marked with a status of **B**.

The dumping of logical logs continues until the alarm is cleared or the informixMon application is restarted and the informixMon application is able to create a level 0 archive.

6.1.4 Database Restore

The following procedure describes the database restore process. It is assumed that all of the parameters that affect the behavior of informixMon are at their default. If they are not, then this procedure may have to be modified slightly. For example, if the backup data file is not in the default directory, then step 2. of the following procedure would have to be modified to account for this change.

1. Open a system window and log in as user **informix**.
2. Execute the following command `cat $WMGHOME/config/backup.dat`.
3. If the current backup directory has a status of **G**, then the current backup directory should be used for database restore. Continue to step 6.
4. If the current backup directory has a status of **B**, then it does not contain all the logical logs that were generated after the level 0 archive was created; i.e. some of the logs were dumped to /dev/null. However, this directory still contains the most up to date backup information. Continue to step 6.
5. If the current backup directory has a status of **A**, then it should not be used. Go back to step 3. However, instead of examining the status for the current directory, look at the status of the predecessor directory to the current directory. The predecessor directory to the current directory is the one on the line above the current directory in the file \$WMGHOME/backup.dat. If the current directory is on the first line, then its predecessor is the last line.
6. Execute the following command: `onstat -`. This command will print out the status of informix.
7. If informix is not on-line, then execute the following command: `oninit`.
8. If the backup directory being used has a status of **B**, then move on to step 9. Otherwise, execute the following command: `onstat -l`. Information about the logical logs will be printed out. One of the logical logs will have a **C** in its **flags** field. This indicates that this is the current logical log. Note the **uniqid** of the current logical log.
9. From the WMG control center, select the **System** menu item.
10. Select **Control**, then select **Processes**. The WMG process control screen will be displayed.
11. Input ALL in the **Process Name** field. Input *CP1* in the **Node Name** field. Select the **Find** button.
12. The WMG processes window will display all currently running processes. Scroll down to the **InformixMon@CP1** process.
13. In the **Service State** pane, click the **Stop** button to stop the informixMon process. Click the **Update** button. Answer **yes** to the confirmation dialog box. The status bar on the WMG control center screen should indicate **DATABASE SERVER DISCONNECTED**.

14. Execute the following command: `mv $INFORMIXDIR/etc/$ONCONFIG $INFORMIXDIR/etc/onconfig.sav.`
15. Execute the following command: `cp /wmgmail/backup1/$ONCONFIG $INFORMIXDIR/etc/$ONCONFIG` where it is assumed that the directory `/wmgmail/backup1` was identified earlier for use in restoration of the database.
16. Execute the following command: `rm /usr/informix/archive_tape_dev.`
17. Execute the following command: `ln -s /wmgmail/backup1/archiveLevel0 /usr/informix/archive_tape_dev` where it is assumed that the directory `/wmgmail/backup1` was identified earlier for use in restoration of the database.
18. Execute the following command: `rm /usr/informix/backup_tape_dev.`
19. Log out as user **informix**.
20. Execute the following command: `touch /wmgmail/backup1/logicalLog346` where it is assumed that the directory `/wmgmail/backup1` was identified earlier for use in restoration of the database and that **346** is the unique id of the current logical log identified earlier.
21. Execute the following command: `chgrp informix /wmgmail/backup1/logicalLog346` where it is assumed that the directory `/wmgmail/backup1` was identified earlier for use in restoration of the database and that **346** is the unique id of the current logical log identified earlier.
22. Execute the following command: `chmod 660 /wmgmail/backup1/logicalLog346` where it is assumed that the directory `/wmgmail/backup1` was identified earlier for use in restoration of the database and that **346** is the unique id of the current logical log identified earlier.
23. Log in as user **informix**.
24. Execute the following command: `ln -s /wmgmail/backup1/logicalLog346 /usr/informix/backup_tape_dev` where it is assumed that the directory `/wmgmail/backup1` was identified earlier for use in restoration of the database and that **346** is the unique id of the current logical log identified earlier.
25. Execute the following command: `ontape -r`. The `ontape` process will prompt you to mount a tape on `/usr/informix/archive_tape_dev`. Press `<enter>` when this prompt appears.
26. Information will be displayed about the archive. The `ontape` process will prompt you to continue. Answer **Y** to this prompt.
27. The `ontape` process will prompt you to backup logical logs. Answer **Y** to this prompt.
28. The `ontape` process will prompt you to mount a tape on `/usr/informix/backup_tape_dev`. Press `<ENTER>` when this prompt appears.
29. The `ontape` process will prompt you about backing up the current logical logs. If the backup directory being used has a status of **B**, then answer **N** to this prompt and skip to step 31. Otherwise, answer **Y** to this prompt.
30. The `ontape` process will prompt you for the oldest logical log to backup. Answer with the smallest logical log unique id that the `ontape` process provides in the prompt. For example, if the `ontape` process prompts with **Logical logs 344 - 346 may be backed up**, then respond with **344**.
31. The `ontape` process will prompt you about restoring a level 1 or 2 archive. Answer **N** to this prompt.
32. The `ontape` process will prompt you about restoring log tapes. Answer **Y** to this prompt.
33. Open a system window and log in as user **informix**.
34. Execute the following command `cd /wmgmail/backup1` where it is assumed that the directory `/wmgmail/backup1` was identified earlier for use in restoration of the database.
35. Execute the following command `ls logicalLog*`.
36. Determine which logical log backup has the smallest number as a suffix. Assume that the file is **logicalLog329**. The logical log backups form an ordering of logical log backups starting from the logical log backup with the smallest suffix up to the one with the largest suffix. Note that the suffixes may not necessarily be sequential.
37. Execute the following command `rm /usr/informix/backup_tape_dev`.

38. Execute the following command `ln -s /wmgmail/backup1/logicalLog329 /usr/informix/backup_tape_dev`.
39. Press <enter> in the window where the ontape process is running.
40. Determine the next logical log backup in the ordering and repeat steps 37. through 39. until all the logical log backups have been restored. The ontape process will prompt you to see if you want to restore more logical logs every time after a logical log is restored. Answer this prompt with **Y** as long as there are more logical logs to restore.
41. When all the logical logs have been restored, answer **N** to the prompt about restoring more logical logs. At this point the ontape process will exit and the database restoration is complete.
42. Execute the following command: `mv $INFORMIXDIR/etc/onconfig.sav $INFORMIXDIR/etc/$ONCONFIG`.
43. Use the OMC GUI to bring the informixMon application and the database servers back on-line.

6.2 RF-CONDUCTOR!

6.2.1 BACKUP:

Before installing the new version of the RF-C! the following files need to be backed up.

Files to be backed up :

The following files need to be backed up

- /etc/hostname.le0
- /etc/hostname.qe0
- /etc/hostname.qe1
- /etc/inittab
- /etc/default/login
- /etc/nodename
- /sbin/rcS
- /etc/hosts
- /etc/netmasks
- /etc/inetd.conf
- /etc/rc2.d/S72inetsvc
- /etc/init.d/inetinit
- /etc/defaultrouter
- /etc/bootptab
- /etc/netconfig
- /etc/device.tab
- /etc/ntp
- /etc/default
- /.profile
- /.rhosts
- /.cshrc
- /.netrc
- /.exec
- /home/rfc/current/alarm.cfg
- /home/rfc/current/gps.cfg
- /home/rfc/current/rfc.cfg
- /home/rfc/current/rfc.passwd
- /home/rfc/current/rfc.lic

- /home/rfc/current/snmpMA.cfg
- /home/.ssn

In order to backup these files to another directory the following command needs to be run ;

6.2.1.1 Backing up files to a directory :

To backup files to another directory (i.e /home/rfc/save_dir) :

The following procedure needs to be followed

```
cd /home/rfc
mkdir save_dir
cd /home/rfc/save_dir
cp /etc/hostname.le0 .
cp /home/rfc/current/rfc.cfg .
```

repeat this process for all the above mentioned files.

6.2.1.2 Backing up files to a Tape :

To backup the above mentioned files to a Tape the following procedure should be followed :

- i) Insert the tape into the local system tape drive
- ii) Execute the following command :

```
tar -cvfh /dev/rmt/0lb /etc/hostname.le0 /etc/hostname.qe0 (enter all the files specified)
press return
```

All the specified files will be saved to the tape.

6.2.2 RESTORE PROCEDURE

:

6.2.2.1 Restoring Files from the /home/rfc/save_dir directory:

To restore the files from the /home/rfc/save_dir do the following :

```
cd /home/rfc/save_dir
cp hostname.le0 /etc/hostname.le0
cp hostname.qe0 /etc/hostname.qe0
.
.
cp snmpMA.cfg /home/rfc/current/snmpMA.cfg
```

6.2.2.2 Restoring Files from the Tape :

To restore the files from the tape do the following :

Insert the tape into the local system tape drive

Execute the following command :

```
tar -xvfh /dev/rmt/0lb
```

All the files stored in the tape will be restored to their respective directories

6.3 CHOREOGRAPHER!

You can back up and restore the Choreographer! database with options from the installation script, **C_Install**. This script may be resident on the hard drive or may be accessed from the installation disk.

Backup Procedures

Database backup is a part of regular system maintenance. You should also perform a database backup before you make any major configuration changes. This backup prevents the loss of system configuration information. When the major changes are operational, perform another backup to save your changes.

To back up the Choreographer! database, use the following procedure:

1. Log on to the system as root.
2. If you run the backup process from the Installation CD-ROM, insert the CD-ROM into the drive.
3. Whether you run the backup process from the installation script or from the CD-ROM, use the following command to launch the backup process:

```
# /opt/C_Install/C_Install <Enter>
```

The Installation Main Menu appears (see Figure 0-1).

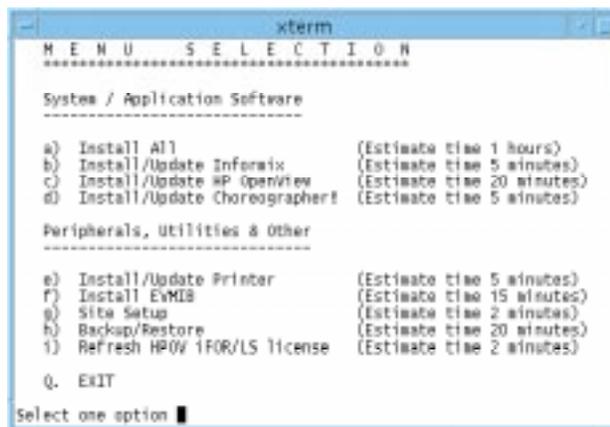


Figure 0-1: Installation Script Main Menu

- 4. Type **h** <Enter>. The Backup and Restore menu appears (see Figure 0-2).

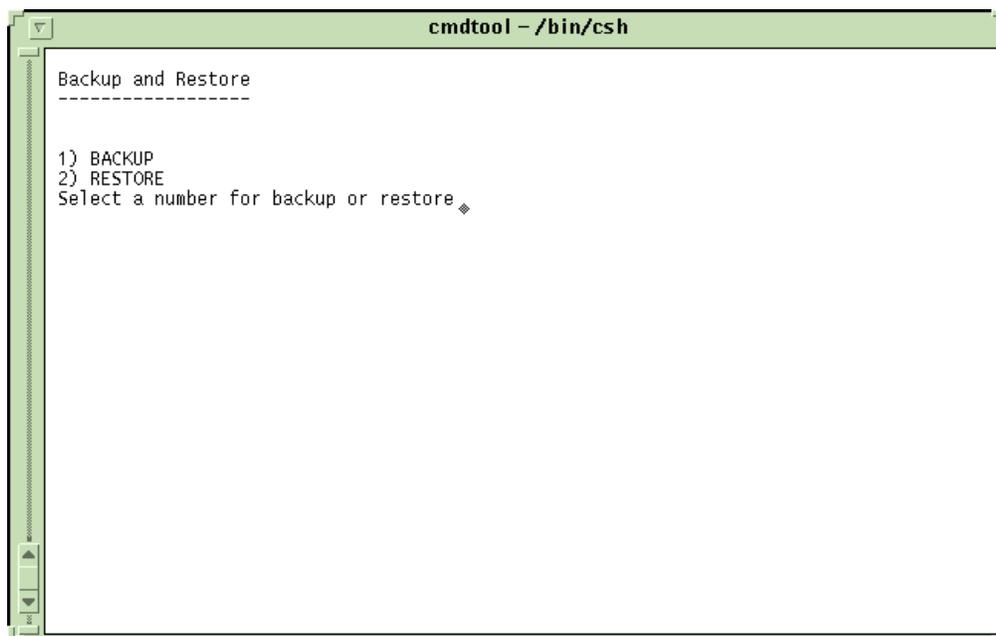
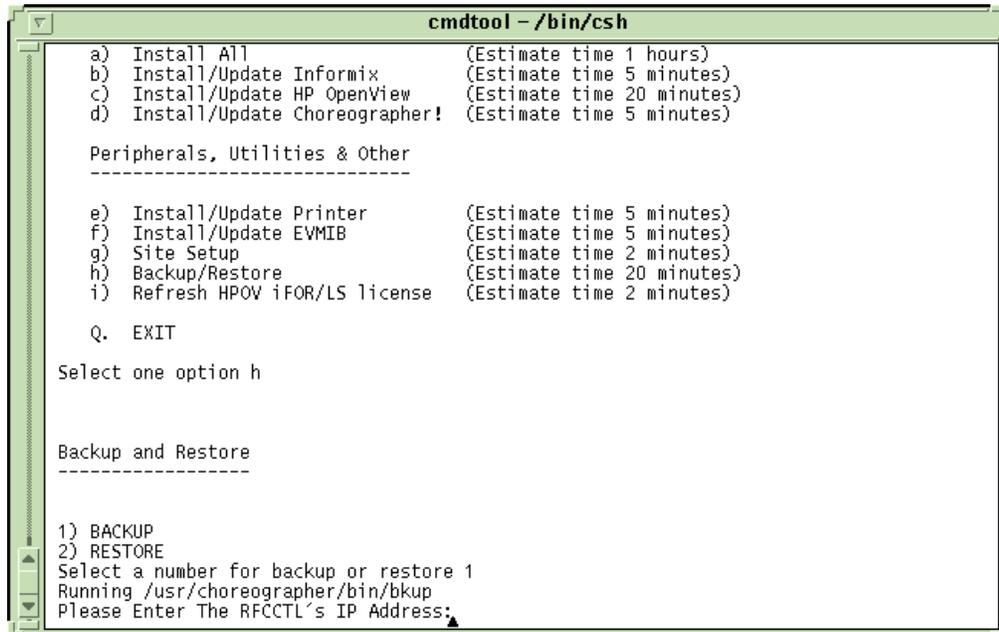


Figure 0-2: Backup and Restore Menu

5. Type **1**<Enter>. The RFCCTL IP Address prompt appears (see Figure 0-3).



```
cmdtool - /bin/csh
a) Install All (Estimate time 1 hours)
b) Install/Update Informix (Estimate time 5 minutes)
c) Install/Update HP OpenView (Estimate time 20 minutes)
d) Install/Update Choreographer! (Estimate time 5 minutes)

Peripherals, Utilities & Other
-----

e) Install/Update Printer (Estimate time 5 minutes)
f) Install/Update EVMIB (Estimate time 5 minutes)
g) Site Setup (Estimate time 2 minutes)
h) Backup/Restore (Estimate time 20 minutes)
i) Refresh HPOV iFOR/LS license (Estimate time 2 minutes)

Q. EXIT
Select one option h

Backup and Restore
-----

1) BACKUP
2) RESTORE
Select a number for backup or restore 1
Running /usr/choreographer/bin/bkup
Please Enter The RFCCTL's IP Address:
```

Figure 0-3: RFCCTL IP Address Prompt

- 6. Type in the control LAN IP address of the RF-C! controller, then press <Enter>. The tape driver name prompt appears (see Figure 0-4).

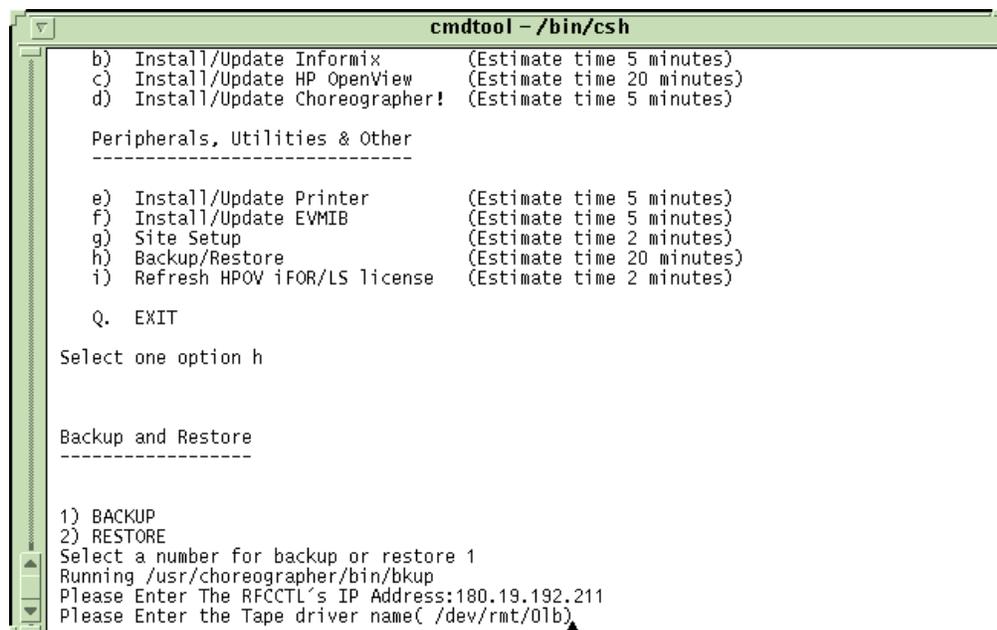
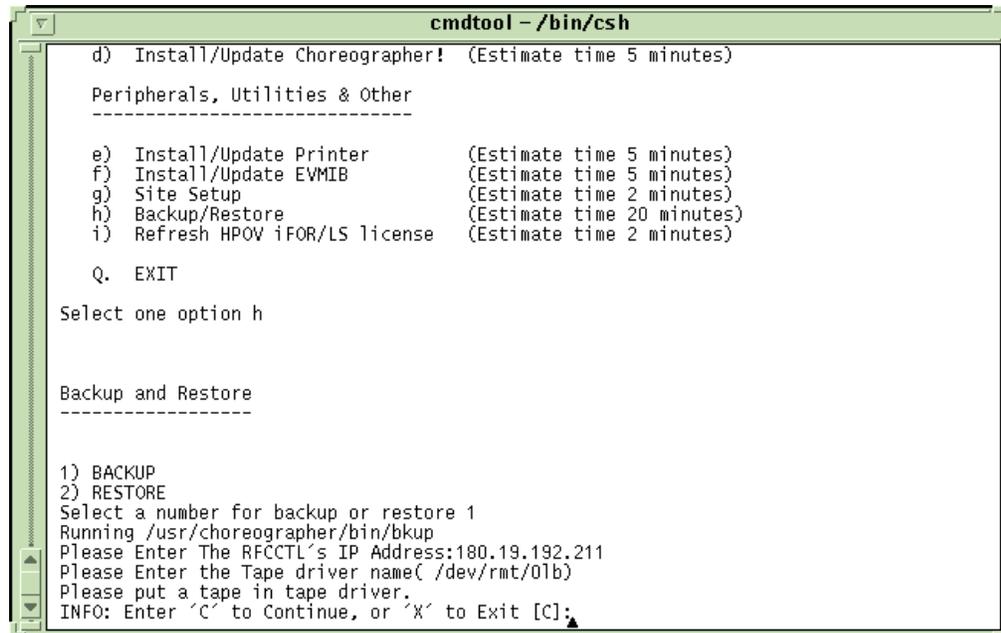


Figure 0-4: Tape Driver Prompt

- When the prompt appears, the default tape driver name should already be visible. Press **<Enter>**. The system prompts you to insert a tape into the tape drive (see Figure 0-5).



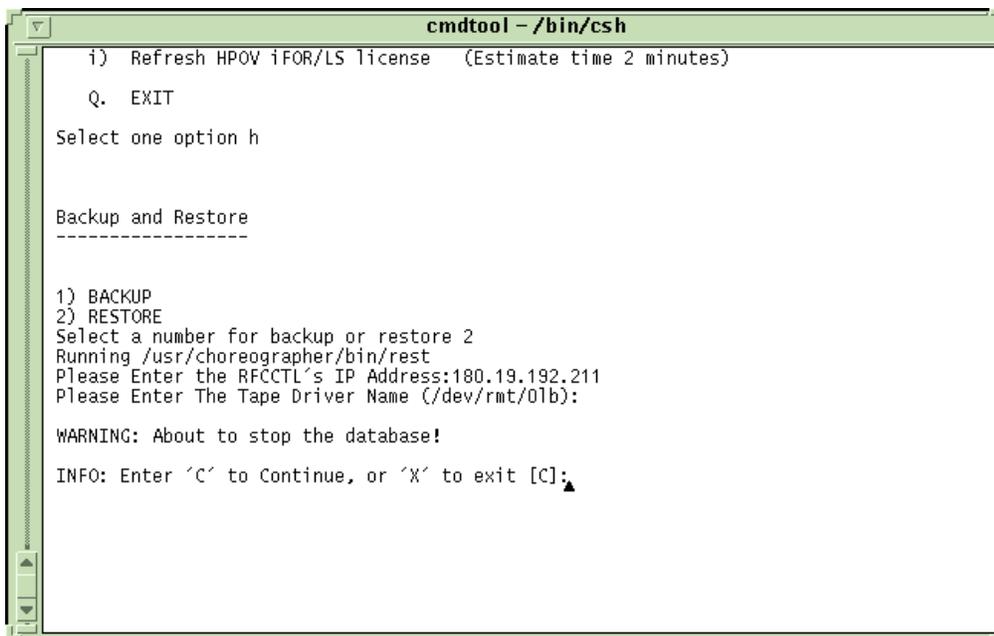
```
cmdtool - /bin/csh
d) Install/Update Choreographer! (Estimate time 5 minutes)
Peripherals, Utilities & Other
-----
e) Install/Update Printer          (Estimate time 5 minutes)
f) Install/Update EVMIB           (Estimate time 5 minutes)
g) Site Setup                     (Estimate time 2 minutes)
h) Backup/Restore                 (Estimate time 20 minutes)
i) Refresh HPOV iFOR/LS license  (Estimate time 2 minutes)
Q. EXIT
Select one option h

Backup and Restore
-----
1) BACKUP
2) RESTORE
Select a number for backup or restore 1
Running /usr/choreographer/bin/bkup
Please Enter The RFCCTL's IP Address:180.19.192.211
Please Enter the Tape driver name( /dev/rmt/01b)
Please put a tape in tape driver.
INFO: Enter 'C' to Continue, or 'X' to Exit [C]:
```

Figure 0-5: Prompt for Tape Insertion

8. Type **c** <Enter> to continue with the backup or **x** <Enter> to abort the backup process. The system responds that the database is about to be stopped (see Figure 0-6).

Stop all processes that affect the database, such as Theater!, NECA, or HP OpenView, before you begin a backup.



```
cmdtool - /bin/csh
1) Refresh HPOV iFOR/LS license (Estimate time 2 minutes)
Q. EXIT
Select one option h

Backup and Restore
-----

1) BACKUP
2) RESTORE
Select a number for backup or restore 2
Running /usr/choreographer/bin/rest
Please Enter the RFCCTL's IP Address:180.19.192.211
Please Enter The Tape Driver Name (/dev/rmt/01b):

WARNING: About to stop the database!
INFO: Enter 'c' to Continue, or 'x' to exit [C]:
```

Figure 0-6: System Warning

9. Type **c** <Enter> to continue with the backup or **x** <Enter> to abort the backup process.
10. When the backup is complete, type **x** <Enter> to exit from the process. Remove the tape from the tape driver and label with the current date and time.
11. You must restart the RFC for the RF-Controller! to use the new configuration.

Restore Procedure

Should a serious system problem occur, or it becomes desirable to regress to an earlier system configuration, the backup tape is used to restore the database.

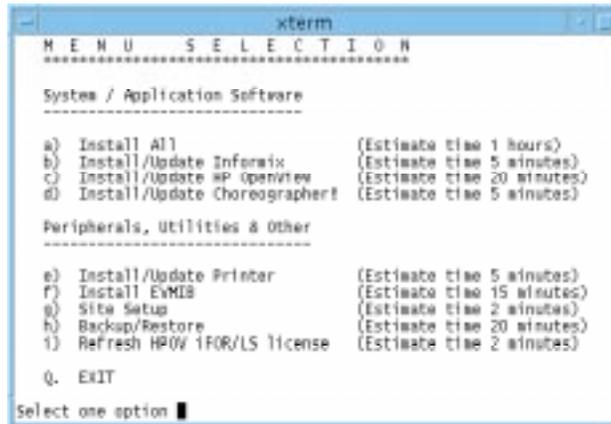
To restore the database, use the folloChoreographer! Network Manager/wing procedure:

1. Log onto the system as root .
2. If running the restore process from the Installation CD-ROM, insert the CD-ROM into the drive.

3. If running the restore process from the installation script resident on the hard drive or once the CD-ROM is inserted, use the following command to launch the restore process:

/opt/C_Install/C_Install <Enter>

The Installation Main Menu appears (see Figure 0-7).



```
xterm
MENU SELECTION
-----
System / Application Software
-----
a) Install All (Estimate time 1 hour)
b) Install/Update Informix (Estimate time 5 minutes)
c) Install/Update HP Openview (Estimate time 20 minutes)
d) Install/Update Choreographer! (Estimate time 5 minutes)
-----
Peripherals, Utilities & Other
-----
e) Install/Update Printer (Estimate time 5 minutes)
f) Install EvMIS (Estimate time 15 minutes)
g) Site Setup (Estimate time 2 minutes)
h) Backup/Restore (Estimate time 20 minutes)
i) Refresh HP/IV 1FOR/LS license (Estimate time 2 minutes)
Q. EXIT
Select one option █
```

Figure 0-7: Installation Script Main Menu

4. Type **h** <Enter>. The Backup and Restore menu appears (see Figure 0-8).

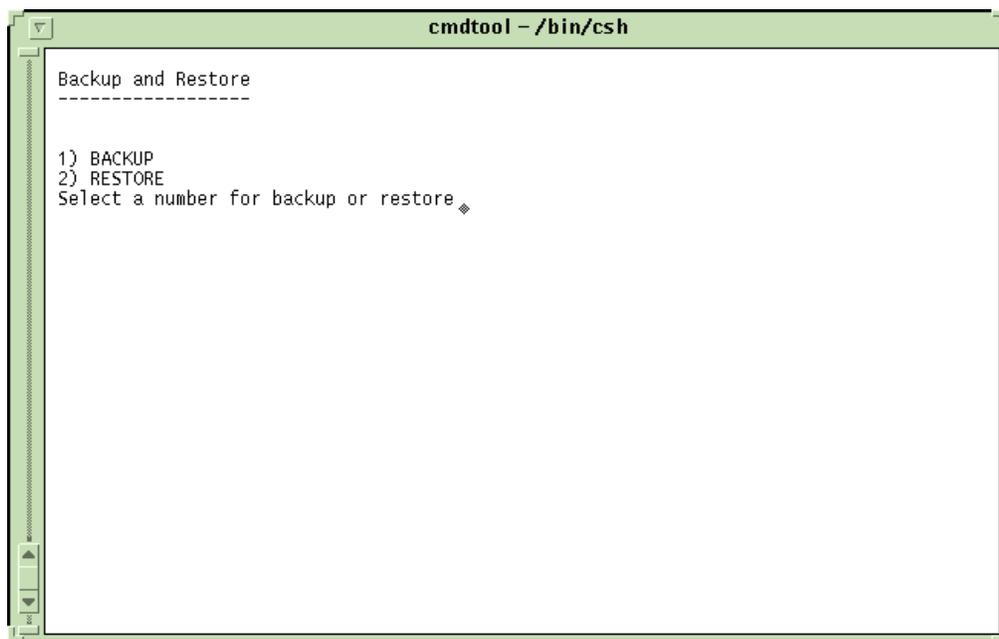


Figure 0-8: Backup and Restore Menu

5. Type **2** <Enter>. The system prompts:
Please Enter the RFCCTL IP Address:
6. Type [**control_lanIPaddress**] <Enter>.
7. The tape driver name prompt appears as follows:
Please Enter the Tape driver name(/dev/rmt/0lb)
8. At the tape driver prompt, the default tape driver name should be visible. Press <Enter>. The system displays the following prompt:
Please put a tape in tape driver.
INFO: Enter 'C' to Continue or 'X' to Exit [C]:

9. Type **c <Enter>** to continue with the restore or **x <Enter>** to stop the restore process.

If you continue with the restore, the system warns:

Warning: About to stop the database!

Stop all processes that affect the database, such as Theater!, NECA, or HP OpenView, before you begin a restore.

10. Type **c <Enter>** to continue with the restore or **x <Enter>** to abort the restore process.
11. When the restore is complete, type **x <Enter>** to exit from the process. Remove the tape from the tape driver.

6.4 RF-BATON!

Not applicable

6.5 NUCLEUS

Not applicable

7 UPGRADE INSTALLATIONS

System upgrade installation procedure will be customer specific. This section specifies recommended upgrade procedures for general installations. System release R1.08 is intended for both Taiwan Fitel and China MPT customer sites.

Copies of the subsystem procedures referenced in this section will be made available at the RRR. The subsystem upgrade procedures referenced below appear in sequential order.

7.1 WMG

WMG subsystem upgrade installation notes have been provided to SITG at product TRR by the development group. SITG has completed installation of the WMG subsystem using these engineering notes and recommends they be followed at customer site.

Reference to WMG Engineering install / upgrade :

File: EngNotes.doc

Total Pages: 44

Date last modified: 31 July 1998

Subsystems included: OMC, CP, UCC, FS, TermServ

7.1.1 Introduction

This document outlines site-specific WMG software installation and upgrade procedures. All procedures outlined in this document **must** be completed in the order presented. These procedures are used after initial factory software load and “burn-in” or when a software upgrade is delivered to an existing installation.

For upgrades from one version to another, specific steps must be taken as outlined in the “Archive Configuration Files” and “Upgrade” sections of this document. WMG software installation will overwrite all of the WMG configuration files and certain Solaris system files as well. You **must** save copies of the site-specific configuration files currently in use so that the WMG can be quickly re-configured.

This document does **not** address any critical or major CRs at time of release. Work-arounds for critical and major CRs will be provided in a separate document derived from the DDTs *Release Notes* enclosure.

7.1.1.1 **System Identification**

Refer to WMG-A! BOM Structure Tree for WMG System for Hardware components and their associated Part Numbers

The following table describes applicable third party software (COTS) required for the China WMG. These revisions are subject to change for each release.

Table 1-1: COTS CI's

Software/Firmware Desc.	Version	Used In/By	Comments	MOT Part #
Sun Solaris OS	2.5.1	CP/ OMC	CD dated 5/96	8280520F33
Sun Solaris patches	Generic_103640-09	CP/ OMC	Provided on WMG Application upgrade tape	Included in 8286134G06
Chase Terminal Server	3.5.02	n/a	Firmware upgraded in onboard EPROMs; iolan3502_vblck16.boot is needed for TNPP	PTRN4186A
Chase Terminal Server - iolan+	4.00.30a	n/a	iolan40030_tnpp.boot is needed for TNPP	
LanPlex 2500 (3COM)	Ethernet hdw: 3.3 Firmware: 7.0.1 Diagnostic: 3.02	n/a	Software upgrade	PTCN4007A
SCO Unixware OS Upgrade	2.1.1	UCC		8280520F42
SCO Unixware OS Upgrade	2.1.2	UCC		8280520F49
SCO Unixware 2.1.1 patche	ptf 3088, 3107, 3111, 3123,3131b, net212.s, rtpmpatch	UCC	ptf3088 - SIGCLD Signal Mapping Supplement ptf3107 - Single UNIX Specification Supplement ptf3111 - LLC Src and Dest SAP Decoupler Supplement ptf3123 - Networking Maintenance Supplement ptf3131b - Intel Processor Supplement net212.s - Network Socket Supplement rtpm patch - rtpm supplement *** Provided with installation "clone" tape	0180302F17

Table 1-1: COTS CI's

Software/Firmware Desc.	Version	Used In/By	Comments	MOT Part #
SCO Unixware 2.1.2 patche	3131b, net212.s, rtpmpatch	UCC	ptf3131b - Intel Processor Supplement net212.s - Network Socket Supplement rtpm patch - rtpm supplement *** Provided with installation "clone" tape	0180302F17
SCO Unixware Host Bus Adapter Drivers	2.1	UCC	Used during load of Unixware	0180302F54
Dialogic Dev. Package for UNIX SVR4.0 System Release 4.2 Production	4.2	UCC	Disk PN 18-0475-001 (10 disks - disks 1,2,3,4, and 6 required)	8280520F39
API Call Control Library for GlobalCall for UNIX SVR4.x	Version 1.0.2	UCC	Disk PN - 99-1235-002; this is not required in the field. (2 disks)	8280520F48
E1/T1 Call Control Library for UNIX SVR4.x	Version 1.01, Production	UCC	Disk PN 18-0516-001 (2 disks)	8280520F48
China R2 Protocol for GlobalCall UNIX SCR4.x	Version 1.02, Production	UCC	Disk PN 99-1235-002 (1 disk)	8280520F44
Dialogic Point Release for Timer Driver	PTR#4202	UCC		0180302F84
Dialogic Point Release for Memory Leakage	PTR#4846	UCC	Fixed memory leak in Dialogic Drivers	0180302F84
Dialogic Point Release for E1 disconnect	PTR#4848	UCC	Fix E1 disconnect errors	0180302F84
Dialogic SCX/160	Special Release for Motorola V1.01 Special 0.01 9/11/97	UCC	SCxBus Software (2 disks)	-new-
Antares Software Developers Base Package for UnixWare 2.0	Version 2.01 Release 3	UCC	Disk PN 18-0245-003 (1 disk)	8280520F40

Table 1-1: COTS CI's

Software/Firmware Desc.	Version	Used In/By	Comments	MOT Part #
SMC EtherEZ ISA LAN Adapters diskette	SuperDisk Version 2.4 11/17/95	UCC	(1 disk)	
Network Appliance File Server	3.1.4d	n/a	Boot Floppy and application software (from netapp ftp site) used.	PTCN1002A
Informix Relational Database	7.10.UC1	OMC		8280520F25 8280520F24
NCD Hmx Terminal	NCDWare 4.0.118; Boot Monitor v2.7.6	OMC	Not determined as final version in BOM	8280520F35
IQ Report Writer	5.1.00	OMC	License key required	8280520F47
Channel Bank - IMACS 600	3.44	UCC	FXS/FXO E1 configuration	DSMP601
Motorola MVME162 running VxWorks	5.3	SS7	DCC card on CP	01V80302F39 PTVN4226A
Motorola dci360 running VxWorks	5.3	SS7	DCI card on UCC	0180502F01 PTVN4226A
Ultra processor platform (Force)	SUNW Ultra 2 Ultra SPARC	CP/ OMC	Openboot revision 3.7 should be loaded from CD.	

7.1.1.2 References

1. WMG TRR Package
2. *WMG S/W Load and Functional Test Procedures*, 12M80402F12
3. *WMG Software Release Procedures*, v1.0
4. *WMG-A! BOM Structure Tree*

7.1.1.3 Scope and Limitations

Prior to installation, refer to the WMG TRR Package for list of COTS software/firmware version numbers and revisions for this release.

The symbol "cp1>", "omc>", "tserv1", "tserv2", "fsv>", or "ucc1" is used to identify the command prompt on the subsystem. The "cp1>" symbol is used to identify both CP1 and CP2; substitute "cp2>" as appropriate when working on the alternate CP. Similarly, substitute the appropriate UCC number for "ucc1".

The OMC and CP tape drive identifier is 0lb (zero-l-b), but is subject to change.

These procedures assume a correctly installed operating system and basic factory-installed configuration as specified in the *WMG S/W Load and Functional Test Procedure*.

This procedure assumes a redundant system configuration. For non-redundant configurations, omit references to cp2.

These procedures assume you know how to use the vi editor.

7.1.2 OMC Installation

7.1.2.1 System Shutdown

From a System Administration window, log in as "root" and enter password (default is motorola), and stop all WMG applications:

```
omc> su root
omc> /usr/local/wmg/bin/resmgr stop
```

7.1.2.2 Archive Configuration Files

Save the following files for later upgrade:

```
omc> mkdir -p /home/tmp
omc> cp /etc/inet/hosts /home/tmp
omc> cp /etc/inet/netmasks /home/tmp
omc> cp /etc/hostmac.* /home/tmp
omc> cp /usr/local/wmg/config/WMG.ini /home/tmp
omc> cp /wmgucc/Tspan /home/tmp
omc> cp /wmgucc/ucc/vru/prompt/UCC_languages /home/tmp
```

Note: Channel Configuration is incompatible with previous versions of WMG software. After installation, use the Channel Configuration GUI to re-create the channel configuration files. Save the current configuration for future reference.

7.1.2.3 Unload the Informix Database

The unload files created in this step will be used in section “7.1.2.6 Upgrades” to restore the Informix database.

Note: The conversion scripts used in section “7.1.2.6 Upgrades” require that Perl is installed on the OMC.

1. Bring INFORMIX On-Line with the *oninit* Command.

```
omc> oninit
```

2. Unload the INFORMIX Database to Flat ASCII Files.
Execute this step only if you are upgrading from R3.1.0.0

```
omc> cd /wmgmail
```

```
omc> dbaccess -e wmg_db  
/usr/local/wmg/config/Utilities/dbase/unloadDB.sql
```

3. Unload the INFORMIX Database to Flat ASCII Files.
Execute this step only if you are upgrading from R3.1.1.0, or R3.1.1.1, or R3.2.X.X

```
omc> cd /wmgmail
```

```
omc> dbaccess -e wmg_db  
/usr/local/wmg/config/Utilities/dbase/SqlScripts/unloadDB.sql
```

7.1.2.4 Old Package Removal

1. Check to confirm that the current version of WMG applications is compatible with the upgrade plan (database schema, WMtp configuration, etc.)

```
omc> pkginfo -I WMG-OMC.* WMG-OMCar.*
```

2. Remove the current version of the OMC applications.

```
omc> pkgrm WMG-OMCar WMG-OMC
```

Pkgrm will ask if you want to remove the WMG-OMCar package.

Type “yes”.

Verify that pkgrm reports “Removal of WMG-OMCar was successful”.

Pkgrm will ask if you want to remove the WMG-OMC package.

Type “yes”.

Verify that pkgrm reports “Removal of WMG-OMC was successful”.

3. Remove the non-package files in the WMG and UCC home directories:

```
omc> rm -rf /usr/local/wmg
```

```
omc> rm -rf /wmgucc/ucc
```

```
omc> rm /wmgucc/*
```

The “rm *” command will report: “rm: license is a directory”. Ignore this warning; the previously defined WMG license directory will remain in */wmgucc*.

7.1.2.5 New Package Installation

1. Insert WMG DAT tape into the OMC DAT tape drive.

2. Unload the WMG IP plan definition from DAT tape.

```
omc> cd /
```

```
omc> tar -xvf /dev/rmt/0lb
```

```
omc> cp /tmp/omchosts.external /etc/hosts
```

```
omc> cat /tmp/omchosts.internal >> /etc/hosts
```

3. Unload the Solaris packages from DAT tape.

```
omc> cd /tmp
```

```
omc> mt -f /dev/rmt/0lbn asf 2
```

```
omc> tar -xvf /dev/rmt/0lb CPAdmin WMGSolPat LWperl
```

The files unloaded from the tape will include:

- CPAdmin directory
- WMGSolPat directory
- LWperl directory

4. Install the Larry Wall perl and Solaris patches packages.

```
omc> pkgadd -a /tmp/CPAdmin/admin -d /tmp WMGSolPat LWperl
```

Verify that pkgadd reports “Installation of WMGSolPat was successful”.

Verify that pkgadd reports “Installation of LWperl was successful”.

When the LWperl package installation is complete, remove the temporary package directories that were unloaded from tape.

```
omc> rm -rf CPAdmin WMGSolPat LWperl
```

5. Perform the Solaris OS Patch Installation.

Use the following command to check the current patch level:

```
omc> uname -a
```

If the command output shows "Generic_103640-09" skip the rest of this step.

Verify you have enough disk space in the root partition. If root utilization is greater than 70% you will need to remove non-essential files. Use 'df' to show disk utilization.

```
omc> df -k
```

Run the install cluster script. This will take approximately one (1) hour. If the patch cluster is installed **more than once**, the subsequent patch installations will fail with return code "2", "Attempt to apply a patch that's already been applied".

```
omc> cd /opt/patches/2.5.1_Recommended
```

```
omc> ./install_cluster
```

When the cluster installation script prompts:

```
Are you ready to continue with the installation (y/n)? Type "yes".
```

Verify the Kernel Patch level is: Generic_103640-09

```
omc> showrev -p
```

6. Unload the OMC applications from DAT tape:

```
omc> cd /tmp
```

```
omc> mt -f /dev/rmt/0lbn asf 3
```

```
omc> tar -xvf /dev/rmt/0lb
```

```
omc> mt -f /dev/rmt/0lbn asf 4
```

```
omc> tar -xvf /dev/rmt/0lb
```

The files unloaded from the tape include:

- CPAdmin directory
- WMG-OMC directory
- WMG-OMCar directory

7. Install OMC applications packages.

```
omc> pkgadd -a /tmp/CPAdmin/admin -d /tmp WMG-OMC WMG-OMCar
```

As pkgadd installs the WMG-OMC and the WMG-OMCar (UCC) packages, a scrolling list of files will be displayed indicating the progress of the installation.

Verify that pkgadd reports "Installation of WMG-OMC was successful".

Verify that pkgadd reports "Installation of WMG-OMCar was successful".

When the WMG-OMCar package installation is complete, remove the temporary package directories that were unloaded from tape.

```
omc> cd /tmp
```

```
omc> rm -rf CPAdmin WMG-OMC WMG-OMCar
```

8. Rewind and eject DAT tape:

```
omc> mt -f /dev/rmt/0lb rewoffl
```

Place DAT tape back in storage case.

9. Configure File Server inode maximum.

Log into the filer, enter password (default is motorola), and use the *maxfiles* command:

```
omc> telnet fsv
```

```
fsv> maxfiles 9999999999
```

The Filer will respond with:

```
max inode count cannot exceed <nnnnn>
```

Substitute the number returned by *maxfiles*, <nnnnn>, in the following *maxfiles* command:

```
fsv> maxfiles <nnnnn>
```

When the Filer prompts:

```
Are you sure you want to increase the maximum number of files? Type  
"yes"
```

Verify that *maxfiles* has been configured correctly and then exit the filer:

```
fsv> maxfiles
```

```
fsv> <control+d>
```

omc>

10. Configure TNPP on a second Terminal Server (**for Chase IOLAN+ terminal server only**)

If your installation supports TNPP, verify that the TNPP Terminal Server is a *Chase IOLAN+*, if it is then proceed otherwise skip to the next step.

omc> telnet tserv2 (no password required; hit <Enter> when prompted)

TSERV2> set term vt100

Note: You may additionally have to enter "set menu" at the tserv2 prompt to activate the menu.

- a. Select "Admin mode" from the Commands Pop-up menu.
- b. Select Password and enter the password: *iolan*
- c. Select "server Examine/modify Server parameters"
- d. Change the "Boot file" parameter to **`"/usr/local/wmg/config/iolan40030_tnpp.boot"`**.
- e. Press <Return> then select "Save & Exit" from the Commands Pop-up menu. Press <Return>.
- f. Select "Reboot Server, press <Return> and then press <spacebar>. (Allow several minutes for OMC prompt to return.)

11. Run the install.factory script

omc> cd /usr/local/wmg/config

omc> ./install.factory

You may see a message indicating "shared memory not initialized" for Informix. This simply indicates that Informix is not currently running; ignore this message.

The install script asks "Specify X-terminal IP's for X display Manager:?". Type y

Enter the hostname of the X displays connected to the OMC (default is omcterm1, omcterm2 ...)

At the end of this script you will be asked if you want to reboot the system. Type "no".

7.1.2.6 Upgrades

7.1.2.6.1 Restoring Configuration Files

Restore the following system files saved in "7.1.2.2 Archive Configuration Files"

omc> cp /home/tmp/netmasks /etc/inet/netmasks

```
omc> cp /home/tmp/hostmac.* /etc
```

Note: The /usr/local/wmg/config/WMG.ini file is highly site-specific. Do not restore this file by simply overwriting them with the older version. You must copy only site-specific lines from the older file into the newer file (e.g. WMtPipes).

7.1.2.6.2 /etc/inet/hosts upgrade for 32 UCCs

The hosts file delivered with the release has been upgraded to support 32 UCCs. Copy site-specific "external" host names from the hosts file saved in "7.1.2.2 Archive Configuration Files" (/home/tmp/hosts) to the new hosts file. Do not modify any internal host names or aliases; only modify those entries in the top portion of the file.

7.1.2.6.3 Time Synchronization Setup For Concert (non-redundant) Systems

If you are upgrading a Concert system and wish to synchronize time through the CP's RFC IPNP lan rather than the OMC's RFC POMC lan (default), perform the following procedure:

```
omc> vi /etc/hosts
```

1. Move the "ntpserv1" alias to the "cp1c" host entry.
2. Write the /etc/hosts file and quit the vi editor.

To complete the ntp synchronization setup, you must also follow the steps given in "7.1.4.5.4 Time Synchronization Setup For Concert (non-redundant) Systems".

7.1.2.6.4 WMG.ini Redundancy work-around correction

Verify that the WMG.ini file does **not** contain the following entries; If the following entries are in the restored WMG.ini file, remove them:

- StartUnsync
- InitAsReady
- ReconcileOnStartup

7.1.2.6.5 WMG.ini upgrade for R3.3.X.X 500k Subscribers

If you are upgrading to 3.3.X.X or later and are upgrading to a 500K subscriber system then you must add the following entry to the [CP API: Hpdb] section of the WMG.ini file after restoring it:

```
TableRows,subscriber = 500000
```

7.1.2.6.6 WMtP Config File Conversion from R1.1.8.X to R3.X.X.X

1. Open the WMtP configuration file (wmtP.cfg) previously saved in section "7.1.2.2 Archive Configuration Files".

```
omc> cd /home/tmp
```

```
omc> /usr/openwin/bin/xterm -e vi wmtpl.cfg &
```

Note: This step will create a new xterm window displaying the current contents of the wmtpl.cfg file. This window should be left open for reference.

2. Transfer wmtpl.cfg file items into the WMG.ini file.

```
omc> vi /usr/local/wmg/config/WMG.ini
```

Note: Host names entered in this section **must** be valid host names or aliases in /etc/inet/hosts.

From the WMG.ini vi session, find the following section header:

```
[CP Service: WMtp-General]
```

Copy each entry from the wmtpl.cfg file into the WMG.ini file under the WMtp-General section.

Note: The method for automatically calculating the Home Index value to be used in the programming of a 2-way pager has changed from R1.1.8.X to R.3.X.X.X per the ReFLEX25 specification. In order to retain the existing Home Index value for an existing terminal, step 3 **MUST** be performed.

3. Manually configure 2-way Home Index for WMG terminal

From the WMG.ini vi session, go to the bottom of the file and add the following section header:

```
[CP Service: NWServer]
```

Add the following lines after the section header.

```
HIXValue = <value>
```

where **<value>** is the decimal integer Home Index value currently associated with the existing WMG terminal.

4. Save WMG.ini file

Once all entries have been copied into the WMG.ini file, save the modifications and exit the vi editor. Quit the vi editor created in step 1.

Note: The following configuration items have been obsoleted in the R3.X.X.X series of the WMG: HomeSPID, HomeIndex, HomeTermId, ServiceAreaId.

7.1.2.6.7 Wmtp Pipe WMG.ini Conversion from R3.1.X.X to R3.3.X.X

```
omc> cd /usr/local/wmg/bin
omc> wmtConvert
```

Verify that all "Pipe" and "Multicast Association" entries convert correctly as specified in the WMG.ini man pages. The WMG.ini file is automatically updated on the CPs when they are rebooted following installation.

7.1.2.6.8 Subscriber Range Table WMG.ini Conversion from R3.1.X.X or R3.2.X.X to R3.3.X.X

```
omc> cd /usr/local/wmg/bin
omc> SRTConvert
```

Verify that all "Subscriber Range" entries convert correctly. The WMG.ini file is automatically updated on the CPs when they are rebooted following installation.

7.1.2.6.9 Fileserver Upgrade from R1.1.8.X to R3.X.X.X

This procedure will convert all subscriber directories found on the file server from R1.8.X.X structure to R3.X.X.X structure. All data is preserved during the conversion.

```
omc> cd /usr/local/wmg/bin
omc> fsconv
```

7.1.2.6.10 Informix Upgrade from R3.1.X.X to R3.3.X.X

1. Turn Informix Transaction Logging Off

Execute this step only if you are upgrading to 500K subscribers.

```
omc> rm /usr/informix/archive_tape_dev
omc> ln -s /dev/null /usr/informix/archive_tape_dev
omc> ontape -s -L 0 -N wmg_db
```

Please mount tape 1 on /usr/informix/archive_tape_dev and press Return to continue ..

```
<Return>
```

Note: A tape does not need to be mounted. Simply press <Return> when the prompt to mount a tape appears.

2. Drop the Informix Database

Execute this step only if you are *not* upgrading to 500K subscribers.

```
omc> echo 'drop database wmg_db' | dbaccess
```

3. Create the Informix Database

Execute this step only if you are *not* upgrading to 500K subscribers.

```
omc> /usr/local/wmg/bin/makedb -n wmg_db -d dbspace1
```

4. Convert the Informix Unload Files

```
omc> cd /wmgmail
```

```
omc>
```

```
    /usr/local/wmg/config/Utilities/dbase/DatabaseMigrate/R3100toR3300/  
    ConvertUnloadFiles
```

5. Load the Informix Database

```
omc> cd /wmgmail
```

```
omc> dbaccess -e wmg_db
```

```
    /usr/local/wmg/config/Utilities/dbase/SqlScripts/loadDB.sql
```

6. Use *dbaccess* to Run the *task* Script:

```
omc> cd /usr/local/wmg/config/Utilities/dbase/InstallScripts
```

```
omc> dbaccess -e wmg_db task
```

7. Turn Informix Transaction Logging On

```
omc> rm /usr/informix/archive_tape_dev
```

```
omc> ln -s /dev/null /usr/informix/archive_tape_dev
```

```
omc> ontape -s -L 0 -B wmg_db
```

Please mount tape 1 on /usr/informix/archive_tape_dev and press Return to continue...

```
<Return>
```

Note: A tape does not need to be mounted. Simply press <Return> when the prompt to mount a tape appears.

8. Remove the Flat ASCII Files.

Note: This step can be postponed until after you are sure that you have migrated the database correctly.

```
omc> rm /wmgmail/*.unl
```

```
omc> rm /wmgmail/*.org
```

7.1.2.6.11 Informix Upgrade from R3.2.X.X to R3.3.X.X

1. Turn Informix Transaction Logging Off

Execute this step only if you are upgrading to 500K subscribers.

```
omc> rm /usr/informix/archive_tape_dev
omc> ln -s /dev/null /usr/informix/archive_tape_dev
omc> ontape -s -L 0 -N wmg_db
```

Please mount tape 1 on /usr/informix/archive_tape_dev and press Return to continue...

<Return>

Note: A tape does not need to be mounted. Simply press <Return> when the prompt to mount a tape appears.

2. Drop the Informix Database

Execute this step only if you are **not** upgrading to 500K subscribers.

```
omc> echo 'drop database wmg_db' | dbaccess
```

3. Create the Informix Database

Execute this step only if you are **not** upgrading to 500K subscribers.

```
omc> /usr/local/wmg/bin/makedb -n wmg_db -d dbspace1
```

4. Convert the Informix Unload Files

```
omc> cd /wmgmail
```

```
omc>
```

```
    /usr/local/wmg/config/Utilities/dbase/DatabaseMigrate/R3200toR3300/
    ConvertUnloadFiles
```

5. Load the Informix Database

```
omc> cd /wmgmail
```

```
omc> dbaccess -e wmg_db
/usr/local/wmg/config/Utilities/dbase/SqlScripts/loadDB.sql
```

6. Use *dbaccess* to Run the *task* Script:

```
omc> cd /usr/local/wmg/config/Utilities/dbase/InstallScripts
```

```
omc> dbaccess -e wmg_db task
```

7. Turn Informix Transaction Logging On

```
omc> rm /usr/informix/archive_tape_dev
omc> ln -s /dev/null /usr/informix/archive_tape_dev
omc> ontape -s -L 0 -B wmg_db
```

Please mount tape 1 on /usr/informix/archive_tape_dev and press Return to continue...

<Return>

Note: A tape does not need to be mounted. Simply press <Return> when the prompt to mount a tape appears.

8. Remove the Flat ASCII Files.

Note: This step can be postponed until after you are sure that you have migrated the database correctly.

```
omc> rm /wmgmail/*.unl
omc> rm /wmgmail/*.org
```

7.1.2.6.12 Statistics GUI Upgrade from pre-R3.3.x.x to R3.3.X.X

Remove all the statistics configuration files from the root directory.

```
omc> cd /
omc> rm STAT_*.STAT
```

7.1.2.6.13 VolumeID Table Upgrade from R1.1.8.X to R3.3.X.X

The volume ID field in the volumeID.table has been changed from 15 to 16 characters in R3.x.x.x version. The volumeID.table is usually located in the \$WMGHOME/wmgmail directory. After the volumeID.table has been restored, run the following commands to upgrade the table.

```
omc> cd /usr/local/wmg/config
omc> volumeid.sh
```

7.1.2.6.14 Permtask Table Upgrade from pre-R3.3.x.x to R3.3.X.X

Convert the permtask table to R3.3.X.X.

```
omc> cd /usr/local/wmg/config/Utilities/dbase/DataConvert
omc> permtaskConv.sh
```

7.1.2.6.15 Alarm Table Upgrade from pre-R3.2.X.X to R3.3.X.X

Alarm identifiers have been re-numbered as of R3.2.X.X releases. Therefore, in order to incorporate the correct alarm identifiers, run the following commands:

```
omc> cd /usr/local/wmg/config/Utilities/dbase/InstallScripts
```

```
omc> dbaccess -e wmg_db alarmclass
```

7.1.2.7 Install Verification

1. Verify the WMG links exist and are defined as follows:

```
omc> cd /usr/local/wmg
```

```
omc> ls -l
```

- /usr/local/wmg/wmgmail-> /wmgmail
- /usr/local/wmg/wmgDB-> /wmgDB
- /usr/local/wmg/wmgCDRProc-> /home/cdr/wmgcdrproc
- /usr/local/wmg/WMtpStats-> /home/stats/WMtp
- /usr/local/wmg/TnkGrpStats-> /home/stats/TnkGrpStats
- /usr/local/wmg/reminderpage -> /home/msg/reminderpage
- /usr/local/wmg/testmsg -> /home/msg/testmsg

2. Verify, at a minimum, that the following directories exists:

```
omc> cd /usr/local/wmg
```

```
omc> ls -1F
```

- Logs
- app-defaults
- bin
- config
- etc
- iqx5
- lib
- man
- Reports
- ucc

3. Verify that the following cron jobs exist in the root cron table:

```
omc> crontab -l
```

- purgefiles
- mv (/usr/informix/online.log)
- updStats
- rdate (for fsv)
- raid scrub(for fsv)
- /var/tmp/xdm-errors
- mailPurge

- start_cdr_proc.sh

Currently, to conserve disk space, the purgefiles cron job:

<u>Purges</u>	<u>Older Than</u>	<u>When</u>
ERRORLOGs	3 days	every day
WMtp Statistics month	31 days	1st day of every month
Trunk Group Statistics month	31 days	1st day of every month
CDRs and Subscriber Statistics month	31 days	1st day of every month

Any of these default values may be changed through the Control->Schedules GUI after the OMC has been rebooted; however, disk usage should then be monitored regularly.

4. Reboot the OMC, and complete the upgrade.

```
omc> sync
```

```
omc> init 6
```

5. Verify the following after rebooting the OMC:

Verify that the "jumbo" patch 103640-09 has been applied to the Solaris kernel with "uname -a"

7.1.2.8 NCD Terminal Reboot Automation for R3.3.X.X Upgrade

At any time when the OMC is rebooted, it is necessary to reboot the NCD to re-establish the xdm session for the WMG GUI applications to work reliably. The following procedure will force a NCD reboot automatically whenever the OMC is rebooted.

1. Execute the following command (assumed you have logged in as root user):

```
omc>cd /usr/local/wmg/config
```

2. Change ncd_std.stp file access permission:

```
omc>chmod 777 ncd_std.stp
```

3. Add the following line at the end of the ncd_std.stp file (if it is not already there):

```
snmp-read-write-community = "community"
```

4. Change ncd_std.stp file access permission to read-only:

```
omc>chmod 444 ncd_std.stp
```

5. Press the "Select" key on the keyboard to bring up the "NCD User Services: Console" window.

6. Select "Console" --> "Reboot" menu item to reset the NCD display terminal.

7.1.2.9 Configure WMtp Pipes (for R.1.1.8.X to R3.X.X.X upgrades ONLY)

Note: No automatic upgrade exists for converting the wmtmp.pipes file used in R1.1.8.X software to the format used in R3.X.X.X. The configuration of WMtp pipes must be performed manually using the following steps.

1. Start an xterm shell from the OMC Top-Level menu. Open the WMtp Pipe configuration file (wmtmp.pipes) previously saved in section "7.1.2.2 Archive Configuration Files".

```
omc> cd /home/tmp  
omc> vi wmtmp.pipes
```
2. Open the WMtp Pipe Configuration GUI. Manually add a WMtp pipe using the GUI for each entry found in the wmtmp.pipes file. Fill in the Pipe Id, password, and peer IP Addresses in the GUI as specified in the entry found in the wmtmp.pipes file. You can optionally provide a textual name for the pipe as well.

If a password is specified for the entry found in the wmtmp.pipes file, be sure to select the "Security" attribute when configuring the WMtp pipe from the GUI. If no password is associated with the pipe, be sure the "Security" attribute is not selected for the pipe's configuration.

3. Once all pipe entries have been configured via the GUI, quit the vi editor and exit the xterm created in step a.

7.1.2.10 Over-riding Standard Read Message Purge Behavior (R3.3.X.X or later)

Note: The mailPurge utility may be configured to purge read messages regardless of the configured purge time. Enabling this option will cause the mailPurge utility to remove any "read" message found on the file server immediately. This is an optional procedure and is only required if existing mailPurge behavior is not desired. The enabling of this feature must be performed manually using the following steps.

1. Open the Schedules GUI (under WMG Top Level | Controls sub-menu). Using the pull down list, select the entry for the mailPurge utility (. /etc/profile; mailPurge -r /wmgmail > /dev/null) and press the Find button.
2. Press the Delete button to remove the current mailPurge schedule from the system.
3. To enable the purge read message immediate functionality, the mailPurge execution line must have the "-pr" option on the command line. Edit the mailPurge schedule execution line to add the "-pr" command line option after /wmgmail as presented below:

4. `./etc/profile; mailPurge -r /wmgmail -pr > /dev/null`
5. After editing the mailPurge execution line, press the Find button and then press the Add button on the Schedule System Process GUI. This will add the new schedule to the system. Once the add is complete, re-select the mailPurge utility from the pick-list and verify that the modifications were accepted.
6. Close the Schedule System Process GUI.

7.1.3 UCC Installation

This section covers the UCC OS configuration and upgrade, including Dialogic configuration and upgrade. This section requires the following hardware:

- VGA card and VGA monitor - the UCC must have a VGA board permitting access to the UCC console logon.
- External DAT tape drive and SCSI cable. On the DAT tape drive set SCSI id to 2.

7.1.3.1 UCC OS Upgrade from R1.1.8.X to R3.3.X.X

7.1.3.1.1 UCC OS Patches

1. From the UCC console, login as root and enter password (default is motorola).
2. Shutdown the UCC, type.

```
UCC1> init 0
```

When "Press any key to reboot" is displayed, power off the UCC. Attach the 4mm DAT tape drive to the UCC and power on the tape drive. Power on the UCC. The UCC will reboot twice to ensure the boards are downloaded.

3. After the UCC reboots the second time, login to the UCC, type.

```
UCC1> init 1
```

4. From the UCC console, login as root and enter password (default is motorola). Check to see if `/etc/conf/init.d/kernel_bak` file exists, type.

```
UCC1> cd /etc/conf/init.d
```

```
UCC1> ls
```

The display will show all files in this directory. If the `kernel_bak` file exists, then delete it by typing the following; otherwise, skip this "rm" command.

```
UCC1> rm kernel_bak
```

Place the 4mm DAT WMG UCC 2.1.1 OS Upgrade/patches tape in the tape drive. Extract the contents of the tape and install the first OS patch. The patches must be installed in the specified order.

5. Install patch06, type.

```
UCC1> cd /  
UCC1> tar -xof /dev/rmt/ctape1  
UCC1> cd /ux2.1.1  
UCC1> ./addpatch06
```

Press <Return> at all prompts to accept all defaults.

6. Install patch05, type.

```
UCC1> ./addpatch05
```

Press <Return> at all prompts to accept all defaults.

7. Install patch07, type.

```
UCC1> ./addpatch07
```

While installing addpatch07, an error message will be displayed “/etc/conf/pack.d/kma/Driver_mp.o does not exist”. This is expected, it does not effect the installation.

8. Shutdown and reboot the UCC, type.

```
UCC1> cd /  
UCC1> shutdown -y -g0 -i6
```

The kernel will be rebuilt and then the system will reboot. Installation of UnixWare patches is now complete.

7.1.3.1.2 Dialogic Antares Driver Removal (for IRQ change)

Skip this section and the following section if you are upgrading UCC for Shared Resources.

1. From the UCC console, login as root and enter password (default is motorola).

```
UCC1> init 1
```

2. From the UCC console, login to the UCC again. To change the Antares IRQ, the Antares driver must be removed and then re-installed.

```
UCC1> removepkg
```

The display will show all packages loaded. Type in the number that corresponds to "Dialogic Antares UNIX Development Package - Version 2.01 Release 3" and press <Return>.

Note: If a prompt is displayed that asks for a diskette, skip the following step and go to step "2. Alternate Package Removal". Otherwise continue with step "1. Standard Package Removal".

1. Standard Package Removal
 - a. Press <Return> at the prompt to continue.
 - b. Press <Return> at the prompt to continue.
 - c. At the "Do you want to continue" prompt, type y <Return>.
 - d. At the "Do you want to rebuild the kernel now" prompt, type y <Return>.
-

Note: There might be some error messages on the console, these can be ignored.

The Antares driver has been removed. Go to step "3. Reboot the UCC".

2. Alternate Package Removal

If the *removepkg* prompt is asking for a diskette, then press the key to abort the *removepkg* command. Do the following.

```
UCC1> /usr/dialogic/bin/Remove/Remove.ant
```

- a. Press <Return> at the prompt to continue
 - b. At the "Do you want to continue?" prompt, type y <Return>
 - c. At the "Do you want to rebuild the kernel now?" prompt, type y <Return>
-

Note: There might be some error messages on the console, these can be ignored.

The Antares driver has been removed. Go to "3. Reboot the UCC".

3. Reboot the UCC

After Antares driver removal, reboot the UCC:

```
UCC1> cd /
```

```
UCC1> shutdown -y -g0 -i6
```

The kernel will be rebuilt and then the system will reboot.

7.1.3.1.3 Dialogic Antares Driver Installation (for IRQ change)

Skip this section if you are upgrading UCC for Shared Resources.

1. From the UCC console, login as root and enter password (default is motorola), type.

UCC1> init 1

2. From the UCC console, login to the UCC again.

Insert the "Antares Software Developers Base Package for UnixWare 2.0 Production Version 2.01 Release 3" diskette (Part Number: 8280520F40) into the disk drive.

3. Install the Antares driver, type.

UCC1> installpkg

- a. Press "F" to select installation via the disk drive.
- b. Press <Return> to continue. The system displays installation messages. If the alternate removal method was used then you will be prompted with "endpoint Error Replace Antares packet with new". Press <Return> at this prompt.
- c. Press <Return> to continue.

At this point in the installation you must select an interrupt vector for the driver.

- d. At the "Select Vector" prompt, type 2 <Return>.
- e. Press <Return> to continue.

Your default Antares Board Config file has been created. You will now be placed in the vi editor. Make no changes. Exit the vi editor by pressing Shift and colon keys at the same time <Shift +:> and type x <Return>

- f. Type y <Return> to continue the installation.
- g. At the "Do you wish to install the library [yn]" prompt, type n <Return>.

The system displays: The driver will now be installed. To install the Dialogic Antares UNIX Development Package - Version 2.01 Release 3, the UNIX kernel must be rebuilt.

- h. At the "Do you wish to build a kernel now [yn]" prompt, Type y <Return>.

The system displays: The unix kernel will be rebuilt to include your configuration changes during the next system reboot...Installation complete. UNIX kernel rebuilt successfully.Installing files...

- i. At the "Would you like to view the release notes [yn]", type n <Return>.
- j. Remove the disk from the disk drive. Shutdown and reboot the UCC.

```
UCC1> cd /
```

```
UCC1> shutdown -y -g0 -i6
```

The kernel will be rebuilt and then the system will reboot. Error messages will be displayed in the boot up sequence until the ucc_system_install script is executed in section 3.4 "Installing UCC Install Scripts".

Installation of the Dialogic Antares UNIX Development Package - Version 2.01 Release 3 package is complete.

7.1.3.2 **Dialogic Patches Installation**

1. From the UCC console, login as root and enter password (default is motorola).
2. The pkglist.dat file contains a list of all Dialogic software that has been loaded, type.

```
UCC1> cd /usr/dialogic/config
```

```
UCC1> view pkglist.dat
```

Verify that patches ptr4202, ptr4846, and ptr4848 have been loaded by inspecting the pkglist.dat file. If all three patches have been loaded then skip to section 3.3 "Upgrading UCC Dialogic software for Shared Resources".

3. If any of the patches have not been loaded do the following.

```
UCC1> init 1
```

4. From the UCC console, login to the UCC again.

Place the Dialogic Patches diskette (Part Number: 01v80302F43) in the disk drive. Extract the contents of the diskette.

```
UCC1> cd /tmp
```

```
UCC1> tar -x0
```

5. If ptr4202 has **not** been loaded, type.

```
UCC1> cd /tmp/patches/ptr4202
```

```
UCC1> ./Install
```

- a. Press <Return> at prompts to continue.
- b. At the "Do you want to continue Installation" prompt, type y <Return>.
- c. At the "Do you want to build the new kernel" prompt, type y <Return>.
- d. Press <Return> to complete the patch installation.

6. If ptr4846 has **not** been loaded, type.
UCC1> cd /tmp/patches/ptr4846
UCC1> ./Install
 - a. Press <Return> at prompts to continue.
 - b. At the "Do you want to continue Installation" prompt, type y <Return>.
 - c. At the "Do you want to build the new kernel" prompt, type y <Return>.
 - d. Press <Return> to complete the patch installation.

7. If ptr4848 has **not** been loaded, type.
UCC1> cd /tmp/patches/ptr4848
UCC1> ./Install
 - a. Press <Return> at prompts to continue.
 - b. At the "Do you want to continue Installation" prompt, type y <Return>.

8. Remove floppy diskette from UCC. Shutdown and reboot the UCC.
UCC1> cd /
UCC1> shutdown -y -g0 -i6

The kernel will be rebuilt and then the system will reboot. Installation of Dialogic patches is now complete.

7.1.3.3 Upgrading UCC for Shared Resources

Note: Prior to installing the Dialogic software, verify that the board ID for the Scxbus board is set to zero. To prevent hardware damage, connect the Scxbus external cables AFTER running ucc_app_install in section 3.5 "UCC Application Installation".

7.1.3.3.1 Dialogic Antares Driver Removal (for IRQ change)

1. Remove Dialogic Antares Package

From the UCC console, login as root and enter password (default is motorola). Verify that the Antares package is installed.

```
UCC1> pkginfo | grep Antares
```

Note: If the Antares package is installed, do the following steps; otherwise, skip to section "3.3.1 Scxbus Software Installation"

2. If Antares package is not installed, type.

UCC1> init 1

3. From the UCC console, login to the UCC again. Remove the Antares Package, type.

UCC1> removepkg

The display will show all packages loaded. Type in the number that corresponds to "Dialogic Antares UNIX Development Package - Version 2.01 Release 3" and press <Return>.

Note: If a prompt is displayed that asks for a diskette, skip the following steps and go to step "5. Alternate Package Removal". Otherwise, proceed with step "4. Standard Package Removal".

4. Standard Package Removal
 - a. Press <Return> at the prompt to continue.
 - b. Press <Return> at the prompt to continue.
 - c. At the "Do you want to continue" prompt, type y <Return>.
 - d. At the "Do you want to rebuild the kernel now" prompt, type y <Return>.

Note: There might be some error messages on the console, these can be ignored.

The Antares driver has been removed. Go to "6. Reboot the UCC".

5. Alternate Package Removal

If the *removepkg* prompt is asking for a diskette, then press the key to abort the *removepkg* command. Do the following.

UCC1> /usr/dialogic/bin/Remove/Remove.ant

- a. Press <Return> at the prompt to continue
- b. At the "Do you want to continue?" prompt, type y <Return>
- c. At the "Do you want to rebuild the kernel now?" prompt, type y <Return>

Note: There might be some error messages on the console, these can be ignored.

The Antares driver has been removed.

6. Reboot the UCC

```
UCC1> cd /
```

```
UCC1> shutdown -y -g0 -i6
```

The kernel will be rebuilt and then the system will reboot.

7.1.3.3.2 Scxbus Software Installation

1. From the UCC console, login as root and enter password (default is motorola).
Insert Dialogic Scxbus Software Disk number 1 of 2 into the UCC disk drive.

2. Install the Scxbus driver, type.

```
UCC1> installpkg
```

- a. Press "F" to install from floppy.
- b. Press <Return> to continue.

At the prompt, eject Dialogic SCXBUS Software Disk number 1 of 2 and insert Dialogic Scxbus Software Disk 2 of 2.

- a. Press <Return> to continue.
- b. At the prompt "Do you wish to continue the installation [yn]?" type y <Return>
- c. At the prompt "Do you wish to continue with the installation [yn]?" type y <Return>
- d. At the prompt "Please enter Mapfile Flag [G for Global/L for Local(default)]:" type L <Return>
- e. At the prompt "Please enter LOCAL Mapfile Path [default: /usr/dialogic/cfg]" : <Return>
- f. At the prompt "Is this correct [yn]?" type y <Return>
- g. At the prompt "Is this the first node you are installing [yn]?" type y <Return>
- h. At the prompt "Please enter Node Name for Node 1": type ucc1c <Return>
- i. Press <Return> to continue

Remove Dialogic Scxbus Software Disk 2 of 2 from the disk drive.

3. Shutdown and reboot the UCC.

```
UCC1> cd /
```

```
UCC1> shutdown -y -g0 -i6
```

- a. After reboot, the system will prompt "To continue, hit Enter": press <Return>
- b. At the prompt "How many streams do you wish to allocate?" type 5 <Return>

If the UCC has Antares DSP boards installed, then do section "7.1.3.3 Dialogic Antares Driver Installation (for IRQ change)"; otherwise, the shared resource upgrade is completed, skip to section "7.1.3.4 UCC Install Scripts Installation".

Note: After installing the shared resources software, the `ucc_system_install` script must be executed as described in section "7.1.3.4 UCC Install Scripts Installation"; otherwise the configuration is not complete.

7.1.3.3.3 Dialogic Antares Driver Installation (for IRQ change)

1. From the UCC console, login as root and enter password (default is motorola).
UCC1> init 1
2. From the UCC console, login to the UCC again. Insert the "Antares Software Developers Base Package for UnixWare 2.0 Production Version 2.01 Release 3" diskette (Part Number: 8280520F40) into the disk drive.
3. Install the Antares driver, type.
UCC1> installpkg
 - a. Press "F" to select installation via the disk drive.
 - b. Press <Return> to continue. The system displays installation messages.
 - c. Press <Return> to continue.

At this point in the installation you must select an interrupt vector for the driver.

- d. Type 2 <Return> at the prompt Select Vector.
- e. Press <Return> to continue.

Your default Antares Board Config file has been created. You will now be placed in the vi editor. Make no changes. Exit the vi editor by pressing Shift and colon keys at the same time <Shift +:> and type x <Return>

- f. Type y <Return> to continue the installation.
- g. Type n <Return> at the prompt Do you wish to install the library [yn]?

The system displays: The driver will now be installed. To install the Dialogic Antares UNIX Development Package - Version 2.01 Release 3, the UNIX kernel must be rebuilt.

- h. Type y <Return> at the prompt Do you wish to build a kernel now [yn]?

The system displays: The unix kernel will be rebuilt to include your configuration changes during the next system reboot...Installation complete. UNIX kernel rebuilt successfully.Installing files...

- i. Type n <Return> at the prompt Would you like to view the release notes [yn]?

Remove the disk from the disk drive.

4. Shutdown and reboot the UCC.

```
UCC1> cd /
```

```
UCC1> shutdown -y -g0 -i6
```

The kernel will be rebuilt and then the system will reboot. Installation of the Dialogic Antares UNIX Development Package - Version 2.01 Release 3 package is complete.

7.1.3.4 UCC Install Scripts Installation

At this point the configuration is not complete so the console may show error messages.

1. From the UCC console login as root and enter password (default is motorola) then do the following.

```
UCC1> init 1
```

2. From the UCC console, login to the UCC again. Insert the UCC Install Script disk (Part Number: 01v80302F??) in the disk drive and extract the contents:

```
UCC1> tar -x0
```

```
UCC1> cd /ucc_install
```

7.1.3.4.1 UCC Master Install Installation

1. Run the UCC master installation script:

```
UCC1> ./ucc_master_install
```

- a. At the "Type of board T1 or E1 [E1]" prompt, enter the appropriate response for the Dialogic board type and then press <Return>.
- b. For E1 board type, at the "Install CN1 R2 protocol? Y,N [Y]" prompt, type Y if China MFR2 protocol is to be used, otherwise type N and press <Return>.
- c. At the "Number of boards 1, 2, or 3 [2]" prompt, enter the number of T1 or E1 boards in this UCC (usually 2) and press <Return>.
- d. At the "Installing DSP board Yes or No [No]" prompt, type the appropriate response— yes <Return> if your system has UAP boards.

- e. At the “Number of boards? 1,2,3,4,5 or 6 [1]” prompt, enter the number of UAP (DSP) boards in this UCC (usually 4) and press <Return>.
- f. At “Press enter to continue...” prompt, press <Return> to continue.
- g. At “Press enter to REBOOT UCC.” prompt, **do not press <Return>**. Instead, remove the UCC install scripts diskette, and press the <Delete> key to terminate this script before the UCC is rebooted.

7.1.3.4.2 UCC System Install Installation

1. Run the UCC system install script:

```
UCC1> ./ucc_system_install
```

- a. Enter the UCC ID and press <Return>. The range is 1-32, which reflects the total number of UCC a system may have. If this is the first UCC, then enter 1.
- b. Press <Return> to continue
- c. At the “Configure TELCO boards” prompt, type N<Return>.
- d. At the “Change minimum tone off detection from 36ms to 24ms? (Enter Y for Taiwan Specification Only) Y or N [N]” prompt, type Y if configuring for Taiwan MFR1 protocol only; otherwise type N and <Return>.
- e. At the “Configure UCC for redundant CPs” prompt, type Y if configuring for redundant CPs; otherwise type N and <Return>.
- f. At the “Configuring UCC for SS7” prompt, type Y if this UCC is to be configured for SS7; otherwise type N and press <Return>.
- g. Press <Return> to continue.
- h. Hit Space bar until time zone prompt appears.
- i. At Time zone prompt: Type the appropriate timezone (for example: type US/Central for US Central Standard Time) and press <Return>.
- j. Press <Return> to reboot UCC.

The system reboots to the Console login. The UCC OS configuration is complete.

7.1.3.5 UCC Application Installation

The UCC application software is installed from the OMC. The OMC installation must be completed prior to executing instructions in this section.

1. Unload files from tar_file

```
omc> cd /wmgucc
```

```
omc> tar -xvf ucc-tar_file
```

```
omc> chmod +x ucc_app_install
```

2. Run UCC application scripts on each UCC

```
omc> cd /wmgucc
```

```
omc> ./ucc_app_install
```

Correctly enter information required by the script. Record this information for future reference. Be sure to set up all UCCs by repeating the execution of this script for each UCC.

- a. Input UCC ID (number) that you are installing. Example, if you are installing UCC 3 you would enter 3. By convention the UCC with host name "ucc3c" is also given UCC ID number "3".
- b. Extract the tar file. For the FIRST UCC type "Y" at the "Do you want to extract the tar file?" prompt. Once the tar file extraction has been done for the first UCC, it is unnecessary to repeat it for each additional UCC.
- c. Type "n" to the "Install from DAT tape?" prompt.
- d. Input the install directory location. Type "/wmgucc".
- e. Input the Telco interface type; Select "T1" or "E1". Input the number of T1 or E1 voice channels; such as "24", "48", or "72" for T1; or "30", "60", or "90" for E1.
- f. Select a Telco channel interface configuration from the menu list. As an example use r2_8_nop for China MFR2 signalling, 8 digit feed, do not prepend digits. Input the local area code (prepend digits) or press "return" for no local area code. These digits may be prepended to the TelCo digit feed to create a subscriber Id, if specified in the Telco channel interface.

At the prompt "Do you wish to configure the UCC in a cluster configuration? ", type "Y" if this UCC is to be part of a cluster and execute the following steps. Otherwise type "N" and press <Return> at the reboot prompt.

- g. Enter a cluster ID (1 -16).
- h. If this UCC has T1 or E1 boards, then type "Y" and proceed to next step, otherwise type "N" and go to Antares DSP board prompt.
- i. Enter a board type as "T1" or "E1".
- j. Enter the number of T1 or E1 boards.
- k. Enter the number of Antares DSP boards.
- l. For T1 board configuration, at the "Zero Code Suppression ?" prompt, type "N" <Return>.
- m. For E1 board configuration, at the "Does this node have China Global Call" prompt, type "Y" <Return>.
- n. At the "Press enter to REBOOT ucc" prompt press <Return>.

Repeat “2. Run UCC application scripts on each UCC” for each UCC in your system.

Note: If configuring a cluster of UCC nodes, after the last node in the cluster has been configured, reboot all nodes by following the step below. Rebooting all nodes applies the new external bus configuration and adds ethernet communication between all nodes in the cluster.

From each UCC console, login as root and enter password (default is motorola) then do the following reboot command.

UCC1> init 0

- a. Turn power off.
- b. Connect external cable.
- c. Turn power on.

3. Restoring configuration files

Restore the following system files saved in “7.1.2.2 Archive Configuration Files”

```
omc> cp /home/tmp/TSpan /wmgucc/TSpan
```

```
omc> cp /home/tmp/UCC_languages  
/wmgucc/ucc/vru/prompt/UCC_languages
```

After the TSpan file has been restored, the CFServer on the OMC must be “restarted”. Use the Process Control GUI to restart the CFServer.

7.1.3.5.1 Channel Configuration Upgrade from R1.1.8.X, R3.2.X.X to R3.3.X.X

Channel Configuration is incompatible with previous versions of WMG software. Re-create the Channel Configuration file by using the Channel Configuration GUI.

7.1.3.6 UCC Special Notes

Taiwan Call Flows (Voice Script Ids) 17 and 18 are no longer available.

- Voice Script 16 - Allows for OAP access in main menu.
- Voice Script 17 - Defaults to OAP.
- Voice Script 18 - No OAP access in main menu.

Voice script 16 has been changed so it has the combined functionality of all three scripts. All COS that previously used voice script ids 17 and 18 will have to be changed to 16. Access to OAP and OAP as the default functionality are controlled in the COS GUI.

7.1.4 CP Installation

The OMC installation must be completed prior to executing instructions in this section. The following sections assume you are upgrading the STANDBY CP followed by the ACTIVE CP.

The following procedures assume the current **STANDBY CP** is **cp1** and the current **ACTIVE CP** is **cp2**. These procedures upgrade the **STANDBY CP** first. Verify which cp is active and standby in your system and switch the names for active and standby cps in the instructions below if necessary.

Note: During the upgrade both CP's will be down for a short period of time.

7.1.4.1 System Shutdown

From a System Administration window running as "root", telnet to the STANDBY CP and stop all WMG applications:

```
omc> telnet cp1
cp1> /usr/local/wmg/bin/resmgr stop
```

7.1.4.2 Archive Configuration Files

1. Archive site-specific configuration files.

Save the following files for latter upgrade:

```
cp1> mkdir -p /home/tmp
cp1> cp /etc/inet/hosts/home/tmp
cp1> cp /etc/inet/netmasks /home/tmp
cp1> cp /etc/hostmac.* /home/tmp
cp1> cp /usr/local/wmg/config/RM_RUN.ini /home/tmp
```

7.1.4.3 Old Package Removal

1. Check to confirm that the current version of WMG applications is compatible with the upgrade plan (WMtp configuration, etc.)

```
cp1> pkginfo -I WMG-CP.* WMGSolPat.* LWperl.*
```

2. Remove the current version of the CP applications LWperl (perl is no longer used on the CP), do not remove WMGSolPat.

```
cp1> pkgrm WMG-CP.* LWperl.*
```

Pkgrm will ask if you want to remove this package. Type "yes".

Verify that pkgrm reports "Removal of WMG-CP was successful" and "Removal of LWperl was successful".

3. Remove the non-package files in the WMG home directory.

```
cp1> rm -rf /usr/local/wmg
```

7.1.4.4 New Package Installation

1. Insert DAT tape into DAT tape drive.
2. Unload the WMG IP plan definition from DAT tape:

```
cp1> cd /  
cp1> tar -xvf /dev/rmt/0lb  
cp1> cp /tmp/cp1hosts.external /etc/hosts  
cp1> cat /tmp/cp1hosts.internal >> /etc/hosts
```

3. Unload the Solaris packages from DAT tape.

```
cp1> cd /tmp  
cp1> mt -f /dev/rmt/0lbn asf 2  
cp1> tar -xvf /dev/rmt/0lb WMG-CP CPAdmin WMGSolPat
```

The files unloaded from the tape will include:

- CPAdmin directory
- WMG-CP directory
- WMGSolPat directory

4. Install the Solaris patches and CP application packages.

```
cp1> pkgadd -a /tmp/CPAdmin/admin -d /tmp WMGSolPat WMG-CP
```

Verify that pkgadd reports “Installation of WMGSolPat was successful”.

Verify that pkgadd reports “Installation of WMG-CP was successful”.

When the WMG-CP package installation is complete, remove the temporary package directories that were unloaded from tape.

```
cp1> cd /tmp  
cp1> rm -rf CPAdmin WMG-CP WMGSolPat
```

5. Rewind and eject DAT tape:

```
cp1> mt -f /dev/rmt/0lb rewoffl
```

Place DAT tape back in storage case.

6. Perform the Solaris OS Patch Installation.

Use the following command to check the current patch level:

```
cp1> uname -a
```

If the command output shows "Generic_103640-09" skip the rest of this step.

Verify you have enough disk space in the root partition. If root utilization is greater than 70% you will need to remove non-essential files. Use *df* to show disk utilization.

```
cp1> df -k
```

Run the install cluster script. This will take approximately one (1) hour. If the patch cluster is installed **more than once**, the subsequent patch installations will fail with return code "2" "Attempt to apply a patch that's already been applied".

```
cp1> cd /opt/patches/2.5.1_Recommended
```

```
cp1> ./install_cluster
```

Verify the Kernel Patch level is: Generic_103640-09

```
cp1> showrev -p
```

7. Run the install script:

```
cp1> cd /usr/local/wmg/config
```

```
cp1> ./install.factory
```

When prompted for SS7 configuration for China or Taiwan, enter "c" (default) or "t" as appropriate. Entering "q" will bypass SS7 configuration file installation on the file server.

At the end of this script, you will be asked to reboot the CP node. Type "no"

7.1.4.5 Upgrades

If you are installing WMG applications on a completely new system, skip this section.

7.1.4.5.1 Restoring Configuration Files

Restore system files saved in "1. Archive site-specific configuration files."

```
cp1> cp /home/tmp/netmasks /etc/inet/netmasks
```

```
cp1> cp /home/tmp/hostmac.* /etc
```

Note: The `/usr/local/wmg/config/RM_RUN.ini` file is highly site-specific. Do not restore this file by simply overwriting them with the older version. You must copy only site-specific lines from the older file into the newer file.

7.1.4.5.2 /etc/inet/hosts upgrade for 32 UCCs

The hosts file delivered with the release has been upgraded to support 32 UCCs. Copy site-specific "external" host names from the hosts file saved in "7.1.4.2 Archive Configuration Files" (`/home/tmp/hosts`) to the new hosts file. Do not modify any internal host names or aliases; only modify those entries in the top portion of the file.

7.1.4.5.3 RM_RUN.ini Redundancy Work-around Correction

Verify that the `$WMGHOME/config/RM_RUN.ini` file does **not** contain a reference to `diperDaemon`. If the `RM_RUN.ini` file contains a reference to `diperDaemon`, delete the line from the file.

7.1.4.5.4 Time Synchronization Setup For Concert (non-redundant) Systems

If you are upgrading a Concert system and wish to synchronize time through the CP's RFC IPNP lan rather than the OMC's RFC POMC lan (default), perform the following procedure:

```
cp1> vi /etc/hosts
```

1. Move the "ntpserv1" alias to the "rfc_ipnp" host entry.
2. Write the `/etc/hosts` file and quit the vi editor.

To complete the ntp synchronization setup, you must also follow the steps given in "7.1.2.6.3 Time Synchronization Setup For Concert (non-redundant) Systems".

Additionally, If the CP is connected to multiple RFCs then each RFC should have `ntpservX` added to the hosts file (where X represents the RFC's number in the network topology). You must then add the additional `ntpservX` entries to the CP's `/etc/ntp.conf`:

```
cp1> vi /etc/ntp.conf
```

1. Add a line containing "server ntpservX".
2. Write the `/etc/ntp.conf` file and quit the vi editor.

7.1.4.6 Install Verification

1. Verify the WMG links exist and are defined as follows:

```
cp1> cd /usr/local/wmg
```

```
cp1> ls -l
```

- /usr/local/wmg/wmgmail -> /wmgmail
- /usr/local/wmg/wmgCDR -> /home/wmgCDR
- /usr/local/wmg/wmgCDRProc-> /home/cdr/wmgcdrproc
- /usr/local/wmg/wmgDB -> /wmgDB
- /usr/local/wmg/wmgSS7 -> /wmgSS7
- /usr/local/wmg/reminderpage -> /home/msg/reminderpage
- /usr/local/wmg/testmsg -> /home/msg/testmsg

2. Verify the /home/wmgblob directory contains 64 directories (one for each possible UCC):

```
cp1> ls -F /home/wmgblob | sort -n
```

3. Verify that the following cron jobs exist in the root cron table:

```
cp1> crontab -l
```

- purgefiles
- mailPurge

7.1.4.7 HPDB Upgrade Procedure For StandBy CP Only

If you are upgrading cp2, skip this section.

7.1.4.7.1 Archive HPDB Real-time Data

1. Stop the Active CP cp2.

```
cp2> /usr/local/wmg/bin/resmgr stop
```

Note: At this point, both CP's will be down and there will be no paging traffic.

2. Save HPDB real-time data.

```
cp2> hpdbMigrate -dump -file /wmgmail/hpdbRTFields
```

3. Convert HPDB real-time data from R3.1.XX to R3.3.X.X

Perform this step only if you are upgrading from R3.1.X.X to R3.3.X.X.

```
omc> cd /wmgmail
```

```
omc>
```

```
/usr/local/wmg/config/Utilities/dbase/DatabaseMigrate/R3100toR3300/hpdb3100  
Convert
```

4. Convert HPDB real-time data from R3.2.X.X to R3.3.X.X

Perform this step only if you are upgrading from R 3.2.X.X to R3.3.X.X. The script that performs the hpdb data conversion is located on the OMC. Open a System Administration window and convert the saved hpdb data:

```
omc> /usr/local/wmg/config/Utilities/dbase/DatabaseMigrate\  
/V2.2toV3.0/migrateRTFields /wmgmail
```

5. Remove HPDB data files.

```
cp2> rm -f /usr/local/wmg/data/*.img
```

7.1.4.7.2 StandBy CP cp1 HPDB Upgrade

1. Remove HPDB data files from StandBy CP cp1.

```
cp1> rm -f /usr/local/wmg/data/*.img
```

2. Reboot CP1.

```
cp1> sync
```

```
cp1> init 6
```

3. Disable paging on CP1.

On CP1, disable paging by using the OMC Process Controls GUI to stop the msgServer.

4. Verify patch to Solaris kernel.

Verify that the "jumbo" patch 103640-09 has been applied to the Solaris kernel with:

```
cp1> uname -a
```

5. Issue a Database Reconcile on CP1.

Using the OMC CP Redundancy GUI, issue a Database Reconcile from the OMC database for ALL tables.

6. Stop the hpdbSyncServer on CP1.

Using the OMC Process Controls GUI, stop the hpdbSyncServer.

7. Load HPDB real-time data on CP1.

```
cp1> hpdbMigrate -load -file /wmgmail/hpdbRTFields
```

8. Start the hpdbSyncServer on CP1.

Using the OMC Process Controls GUI, start the hpdbSyncServer.

9. Enable paging on CP1.

On CP1, enable paging by using the OMC Process Controls GUI to start the msgServer.

7.1.4.8 CP2 Upgrade

It is now time to upgrade CP2. Start the upgrade procedure at “7.1.4.1 System Shutdown” thru section “7.1.4.6 Install Verification”.

1. After upgrading CP2, type

```
cp2> sync
```

```
cp2> init 6
```

2. Verify patch to Solaris kernel on CP2.

Verify that the “jumbo” patch 103640-09 has been applied to the Solaris kernel with:

```
cp2> uname -a
```

7.2 RF-CONDUCTOR!

Note: If you are upgrading from a version older than v2.2.8, you are required to perform a complete install, not an upgrade. This will re-structure the directories into the new format.

7.2.1 Unpacking the RF-C! package from tape

When you receive the RF-C! installation tape, you must first unpack the RF-C! package from the tape before starting the actual installation.

1. Insert the tape into the local system tape drive.

2. Log on to the system as root (assuming that you already has Solaris 2.5.x installed on the system).

3. Type: **mkdir /tmp/rfc**

4. Type: **cd /tmp/rfc**

5. Type: **mt -f /dev/rmt/0lb status** to verify that the tape drive is accessible. An error will be displayed if the drive is not accessible. If the tape drive is not accessible then you may want to make sure the cables are connected correctly then reboot the system (shutdown -i6 -g0 -y). If the problem persists then contact the system administrator.

6. Type: **tar xvf /dev/rmt/0lb**

7. Type: **cd /tmp/rfc/Install**

8. Run the install scripts as described in the next section, Running the installation scripts.

7.2.2 Running the installation scripts

7.2.2.1 Guide lines for upgrading RF-C! on the redundant systems:

If you are upgrading the RF-C! (using ./install.sh -u), then you only have to do the upgrade on side-A (the primary node).

- 1.If the RF-C! is up and running, then make sure side A is the primary (active) side. Otherwise, go to the next step.
- 2.Start upgrading side A.
- 3.When finish upgrading side A, DO NOT reboot the system yet.
- 4.If SSCB is also required to be upgraded, then go to SSCB Installation section for other instructions.
- 5.Reboot side A and wait for HA to come up all the way.
- 6.Reboot side B and wait for HA to come up and side B became the secondary host.
- 7.Verify the systems.

7.2.2.2 The RF-C! upgrade mode

You should use this mode to upgrade the RF-C! software to a new version. When running in this mode, the install scripts will only upgrade the RF-C! they will not configure the system or install other packages such as HA or HP printer server.

The install scripts will also save all of the existing RF-C! configuration files in another file system (/home/SavCfgDir) for future references.

If the RF-C! configuration files were saved during the install, the scripts will ask you whether or not you'd like to automatically overlaid the newly installed RF-C! configuration files with the previously installed files.

If you are upgrading a redundant system, then follow these steps:

Make sure side A is active and is running as a primary node.
cd /tmp/rfc/Install
Execute the install scripts: ./install.sh -u

Please note: There is no need to upgrade side B.

If you are **upgrading a non-redundant system**, then follow these steps:

Logon to the system.
cd /tmp/rfc/Install
Execute the install script: ./install.sh -u

Note that, you may also use the Automated Field Install Mode or the Interactive Mode for upgrading the RF-C!, but running in the Upgrade Mode is the quickest and easiest way to upgrade the RF-C!.

Note: If upgrading a Non-Redundant system using RF-C! upgrade mode:

- 1) Save rfc.cfg, rfc.passwd, rfc.lic, snmpMA.cfg files prior to installation of the new software to a different directory (e.g. /home/rfc/sav_cfg).
- 2) Once the upgrade is done copy over rfc.cfg, rfc.lic, rfc.passwd, snmpMA.cfg files to /home/rfc/current before rebooting the system.

7.2.2.3 SSCB Installation

The following steps describe how to install and configure SSCB. It is assumed that the RF-C! and other optional packages were already installed on the systems

(redundant or non-redundant) and that the machines are in the state of ready to be rebooted to bring up the RF-C! to the new installed level. (In other word, if

SSCB is not required for your systems, then you can skip the following section and just reboot the systems).

1. Install the VME patch as follows:

```
cd /tmp/rfc
```

```
pkgadd -d `pwd` THEMISvme
```

Press <ENTER> at the following prompt:

```
Where should the driver objects be installed [/kernel/drv]?
```

2. Reboot the system:

```
shutdown -y -i6 -g0
```

3. Load the SSCB driver:

```
cd /home/SSCB/sscbdriver
```

```
./attach_sscb
```

4. Reboot the system again:

```
shutdown -y -i6 -g0
```

5. Verify SSCB:

```
cd /home/SSCB/sscbtests
```

```
./plledtest
```

Watch the led's on the SSCB card to see if they are flashing as expected.

6. If you are installing redundant systems, you must:

Complete all of the above steps on side A,

Wait for side A to come up all the way and became primary host,

Repeat all of the above steps on side B

7.2.2.4 .Verify the RF-C! installation

After installing the RF-C! you should verify whether the RF-C! was correctly installed.

Changing the Training Sample Length for txttype RF_BATON:

1) vi rfc.cfg

2) Search for RF_BATON (esc /RF_BATON), just above that line you will find trainingSampleLength 10, replace 10 with 14 .

3) Also check that Additional NID frames is set to 120.

There are several ways to verify the installation:

Verifying the installation before rebooting the system.

Some of the system configuration information you may want to verify right after the install scripts have finish but right before rebooting the systems.

Sometimes it is better to discover problem before the system is rebooted.

Verify that all the symbolic links are pointing to the correct places:

/home/rfc is a directory, for non-redundant systems.

/home/rfc -> /shared/rfc, for redundant systems.

/home/rfc/current -> vx.y.z, where x, y and z are the version numbers.

RFC_main -> /home/rfc/current/RFC_main_vx.y.z for non-redundant systems.

RFC_main -> /shared/rfc/current/RFC_main_vx.y.x for redundant systems.

RFC_snmpMA -> /home/rfc/current/RFC_snmpMA_vx.y.z for non-redundant systems.

RFC_snmpMA -> /shared/rfc/current/RFC_snmpMA_vx.y.x for redundant systems.

RFC_swdSA -> /home/rfc/current/RFC_swdSA_vx.y.z for non-redundant systems.

RFC_swdSA -> /shared/rfc/current/RFC_swdSA_vx.y.x for redundant systems.

Verify the content of the following RF-C! configuration files:

/usr/HA/ha_file/RFC_standby

/home/rfc/current/gps.cfg

/home/rfc/current/rfc.cfg

/home/rfc/current/snmpMA.cfg

/home/rfc/current/rfc.passwd

/home/rfc/current/rfc.lic

Verify the content of the following operating system configuration files:

/etc/hosts - should contain correct host names and IP addresses.

/etc/netmasks - should contain correct network masks.

/etc/inittab - for redundant systems, this file should not have any line for starting up the RF-C!. HA will take care of starting up and shutting down the RF-C!

Verifying the installation after the system is rebooted.

After rebooting the system, you must verify whether the RF-C! was correctly started.

Verify whether the RF-C! is running using the ps command as follows:

```
ps -ef | grep -i rfc
```

For both primary redundant and non-redundant systems, you should see the following three RF-C! processes:

```
RFC_main, RFC_swdSA, RFC_snmpMA
```

For a secondary redundant system, you should see only the RFC_main process running.

For redundant system, you must also verify whether HA is running using the ps command:

```
ps -ef | grep -i ha
```

For both primary redundant and secondary redundant systems, you should see the following processes:

```
HA.x, ha_mai.x, HA_remote.x
```

For redundant system, you must also verify whether /shared was correctly mounted using the mount command (without any arguments).

For the primary redundant system, you should see the /shared filesystem being read/write.

For the secondary redundant system, you should see the /shared filesystem being read only.

7.2.3 Installing Solaris Patch Cluster

Note: Install the Solaris patches on both sides of the Redundant RF-C!. It is recommended that HA services and all RF-C! processes such as RFC_main, RFC_swdSA and RFC_snmpMA are not running.

In order to stop the above mentioned processes do the following :

HA services should be stopped on both sides : To stop HA services do the following :

1) cd /etc/rc2.d

2) S99.HA stop

This should be done on both sides of the Redundant RF-C!

To stop all RF-C! processes :

For a Non-redundant system : ./RFC_shutdown NONREDUNDANT off

For a Redundant system : ./RFC_shutdown REDUNDANT off on side A and side B respectively

The Solaris patches for Solaris 2.5.1 have been included on the release. They are found in /tmp/rfc after the release is untar'd from the media to the unit. To untar

1. Insert the tape into the local system tape drive.

2. Log on to the system as root .

3. Type: **mkdir /tmp/rfc**

4. Type: **cd /tmp/rfc**

5. Type: **mt -f /dev/rmt/0lb status** to verify that the tape drive is accessible. An error will be displayed if the drive is not accessible. If the tape drive is not accessible then you may want to make sure the cables

are connected correctly then reboot the system (shutdown -i6 -g0 -y). If the problem persist then contact the system administrator.

6.Type: **tar xvf /dev/rmt/0lb**

To install the Solaris patches for Solaris 2.5.1

1. A directory RFCSolPat will be created under /tmp/rfc.
This will have a tar file 2.5.1_Recommended_100497.tar.
2. Untar this file using " tar xvf 2.5.1_Recommended_100497.tar ".
This will create a directory under RFCSolPat called 2.5.1_Recommended.
3. cd into 2.5.1_Recommended.
Run the script install_cluster by typing the following at the unix prompt:
./install_cluster
4. install_cluster will require 2-3 hours to completely install the patches in the proper directories.

Note: that it is required that the /, /usr, /var, or /opt partitions have a minimum of 4 MBytes of available disk space each.
5. You can examine the log file for any error messages, etc., by typing:
cat /var/sadm/install_data/Solaris_2.5.1_Recommended_log

Note: THE MACHINE NEEDS TO BE REBOOTED FOR ALL PATCHES TO TAKE EFFECT.

6. Reboot the machine by typing:
shutdown -i6 -g0 -y
7. Type in "showrev -a" on the command line.

**Note: In addition to other information, the kernel version should say
"Kernel version: SunOS 5.5.1 Generic 103640-12 July 1997"**

7.3 CHOREOGRAPHER!

NONE

7.4 RF-BATON!

7.4.1 Introduction

The purpose of this document is to give detailed descriptions of all methods of loading software images into the FLASH ROM on the RF-Baton! board. These methods include Local Software Download via the front panel serial port, remote software download via Ethernet from an RF-Choreographer!, or programming using PROG32..

7.4.2 Remote Software Download via RF-Choreographer!

Background

The Remote Software Download via the RF-Choreographer downloads a new software image to the Dormant Flash Bank. The RF-B! continues to pass paging traffic while the download is underway. Paging operation will be disrupted temporarily once the cutover of the new software is performed. This disruption is equivalent to the time the RF-B! takes to reset and achieve GSP synchronization, approximately 5-10 min-

utes.

Equipment

- Workstation running HP Openview network manager software.
- RF-B! connected to network.
- Unix formatted RF-Baton! S-Record File (i.e., rfb120.dl)
- Current RF-B! MIB (Management Information Block)

Procedure

1. Place the S-Record File to be loaded into a /tftpboot directory of the machine that runs the tftpserv-er.(Choreographer).
2. Change directory to /opt/OV/bin
3. Start HP Openview -- with the command `ovw &`
4. If the correct version of the MIB is already loaded into Openview, skip to Step 11.
5. To load a MIB, copy the MIB into the home directory of your Workstation.
6. Click **OPTIONS**
7. Select **Load/Unload MIBs**
8. Enter the name of the MIB file (i.e., rfb.mib)
9. Select **LOAD**
10. Once **SUCCESS FLAG** is displayed proceed to step 14, otherwise return to step 8 and try again.
11. On the MIB Browser, Click on **MISC**.
12. Select **SNMP MIB Browser**.
13. Once **Browse MIB** window appears, enter the IP address of the transmitter which is to be loaded with the new software.
14. Enter "private" in **Community Name** field. The **Community Name** field is used for access restrictions. The default value is "public", which allows get only operation, while "private" allows both set and get operations.
15. Select **private** by double clicking.
16. Select **enterprises**
17. Select **motorola**
18. Select **paging**".
19. Select **products**
20. Select **rfc**
21. Select **bitmap**

The following objects appear in the box:

bcmdeviceMgmt
bcmfaultMgmt
bcmPerformanceMgmt
bcmSWDownloadMgt
bcmConfigurationMgmt

22. Select bcmSWDownloadMgt

23. Select softwareControl

The following MIB objects should be displayed:

- activeFlashBank
- activeBankSWVersion
- dormantBankSWVersion
- startDownloadToRFBParam
- cutoverToRFBDormantBankParam
- startDownloadToRFOParam
- cutoverToRFODormantBankParam
- dormantDownloadStatusParam
- downloadNewFileName1Param

24. Read the active Flash Bank by selecting **activeFlashBank**, then select **Start Query**

In the same way check the following:

dormantDownloadStatusParameter

This should be 0 before start of a download.

25. To Start RF-B! download, select **startDownloadToRFBParam**.

26. Enter **0** in MIBInstance box.

27. Enter **1** in SNMP Set Value.

28. Select **Set**.

The "Set has completed Successfully" window will appear.

Software Download is underway.

29. After about 20 minutes (using 64 Kb link) select **dormantDownloadStatusParameter**

This should be **1** for a successful download of the dormant Flash ROM image.

30. If **dormantDownloadStatusParameter** was 1, cutover to the new software can be done by selecting **cutovertoRFBParam**.

Download is now complete.

Note: See "Section Parameter Database Updating" to determine whether any updates to the parameter database are necessary.

7.4.3 Local Software Download via Front Panel

7.4.3.1 Introduction

The purpose of this document is to give detailed descriptions of all methods of loading software images into the FLASH ROM on the RF-Baton! board.

The Software download procedure to the RF-B! is executed entirely from within the FIPS interface. The procedure executes a software download via TFTP from a TFTP Server which is identified by an IP address. Before beginning, obtain the name of the file to download (it must have a filename **exactly** 8 characters long).

This procedure is non-destructive. In other words, all network and configuration parameters remain in place.

Before starting the software download, the RF-B! must be up and running and its FIPS port must be remotely accessible.

1. Read the current active bank:

-
- FIPS: r 901 *(the outcome is 1 for flash bank A or 2 for flash bank B)*
2. Read the active application software version:
FIPS: r 148
 3. Read the dormant bank software version:
FIPS: r 152
 4. Ensure that there are no pending swdnld errors logged in the FIPS error log:
FIPS: a 110
 5. Clear the software event log:
FIPS: a 113
 6. Display the tftp configuration:
FIPS: a 300
FIPS:
Current tftp parameter configuration:
TFTP server IP address: 180.20.192.51
remote file name : rfb1
Commands to proceed further:

a 310 to start download to RFB
a 312 to switch over to dormant bank
a 301 xx.xx.xx.xx to set TFTP Server IP address
a 302 file name to set TFTP download file
NOTE: 8 characters MAXimum
 7. Change the filename to the name of the image to be downloaded. The filename should be 8 characters long (exactly). For example:
FIPS: a 302 boot_esp
 8. Change the IP address to that of the tftp server. The image file being downloaded (S record file - unix version) should be in the /tftpboot directory of the machine that runs the tftp server. For example, the following commands assumes that the IP address of the tftp server is 10.128.70.25:
FIPS: a 301 10.128.70.25
 9. Set the download status parameter 430 to 0:
FIPS: w 430 0
 10. Start the download by entering
FIPS: a 310

The download time will be approximately 10 minutes.
 11. If the RF-B! is in the vicinity, watch the second LED from the right. It will start flashing when the newly downloaded file begins to be burned into the flash memory. You should wait approximately

- 30 seconds after the LED stops flashing.
12. Verify that no SWDNLD or TFTP errors are logged. Issue the command: 'a 110' and check the content of the event log.
 13. Read the dormant download status parameter 430:

FIPS: r 430

If the parameter value is 1, then the download and burning of the image into the dormant bank has been successful. If the value is not 1, even after waiting a sufficient amount of time, then you should check the event log for error messages by issuing the FIPS command 'a 110'.
 14. If the download is successful, enter the cut-over command 'a 312'. This will cause the RF-B! to re-boot.
 15. At this point, you should check the active bank and verify the software version of the active and dormant banks by repeating steps 1 through 3.

7.4.4 Upgrade Via SIMM Replacement

This method of upgrading is straightforward, however, it requires that the upgrade be done at the site where the RF-B! is located.

Since this procedure requires a SIMM replacement, all configuration parameters will be destroyed.

7.4.4.1 Hardware Needed

The only hardware needed for this procedure is (1) a Torx screw driver and (2) an upgrade SIMM.

7.4.4.2 Procedure

1. Read the event and software logs and note any significant messages:
a 104
a 110
2. Clear the event and software logs:

a 111
a 113
3. Complete the following check list. Copy down all parameters in response to the following FIPS commands:

FIPS: r 705(*reads IP address*)

FIPS: r 706(*subnet Mask*)

FIPS: r 708(*Gateway Address*)

FIPS: r 704(*Xmit Color Code*)

FIPS: r 55(*UDP Port Number*)

FIPS: r 901(*Current Active Bank*)

If the response to 'r 901' is not 1, then do a 'w 901 1' before powering down the station.

4. Power down the RF-B! and remove the front panel!.
5. Pull the control board (PTTN4009B) out of the housing and place it in a static-free area.
6. Remove the flash SIMM with the old software from the board. *The control board has 2 SIMMs; the one of interest to you is in SK901.*
7. Place the new SIMM in the socket SK901.
8. Set DIP switch #2 of SW600 to the ON position.
9. Place the control board back in the housing, turn the RF-B! power back on, and wait until it completes its boot cycle.
10. Using FIPS (write commands), restore the network parameters that you copied in step 3.
11. Read the current active bank:

r 901(*the outcome is 1 for flash bank A*)
12. Read the active application software version:

r 148
13. Turn the RF-B! OFF and again remove the control board one more time.
14. Set DIP switch #2 of SW600 to the OFF position.
15. Place the control board back in the case, turn the RF-B! power back on, and wait until it completes its boot cycle.
16. Verify the settings recorded in step 3.

7.4.5 Flash Programming via PC Running Prog32

Background

This method of programming Flash is not recommended for field use. It requires special software, Prog32-BDM Programmer from P&E Microcomputer Systems, Inc. A special cable needed to connect from the PC's parallel I/O port to the P300 on the BCM board is required. This cable needs to be purchased from P&E Microcomputer Systems, Inc.

Paging operation is not possible while this method of software download is being performed.

Equipment

- PC with PROG32 installed.
- Cable from PC parallel-port to P300 on BCM.
- DOS formatted RF-B! s-record file (s19 format).
- RF-Baton! module connected to power supply.

Setup

Connect PC's serial port to RF-Baton! P300 via special cable.
Put DOS-formatted S-record file to be loaded in the directory with PROG32.

Procedure

1. Place RF-B! SIMM to be programmed in RF-B! SIMM socket (SK901).
2. Apply power to the RF-B!
3. Run PROG32 (type PROG32 in directory containing PROG32.EXE)
4. Select CM-Choose Module
5. Select am9040b.32 from choices. This selects Flash Bank B.
6. Enter 0 for Base Address.
7. Select EM-Erase Module to clear Flash Bank B.
8. Select CM-Choose Module
9. Select am9040a.32p. This selects Flash Bank A.
10. Enter 0 for Base Address.
11. Select EM-Erase Module to clear Flash Bank A.
12. Select SS-Specify S-Record
13. Choose the correct s19 file. By default, PROG32 lists files in the same directory as the PROG32.EXE file.
14. Select PM - Program Module to begin programming Flash Bank A.

PROG32 will display "Programming" while the Flash Bank is being loaded.
In about 5 minutes, PROG32 will display "Programmed." to signal that programming is complete. Remove power from the RF-B!. The SIMM is now ready to be used.

Note: Steps 4-7 are used to assure that Flash Bank B is empty. These steps can be skipped if the user wants to retain the image of Flash Bank B.

Note: See Section "Parameter Database Updating" to determine whether any updates to the parameter database are necessary.

Parameter Database Updating

The parameter database information is stored on an EEPROM (SK900) on the RF-Baton!. Occasionally, new parameters are added to support a new feature of the RF-Baton! software. Efforts are made to keep backwards compatibility with older software versions, to avoid the need to reprogram the parameter database whenever the software is upgraded. In certain cases, you may also need to manually initialize new parameters (via FIPS) without resetting the entire database.

In certain instances it is necessary to initialize the parameter database. These instances are:

- Installing RFB 1.2.4 SIMM into a New Board (one that has not been previously programmed)
- Installing RFB 1.2.4 SIMM into a board with unknown EEPROM programming. If you are uncertain

of the condition/state of the EEPROM in the board, it would be a good idea to reset the parameter database.

- The previous RFB software version was prior to 1.0.0.

If none of the above conditions is true, there is no need to reset the parameter database (go to Section "Initializing New Parameters" to see if any new parameters need to be manually initialized via FIPS)

Resetting the Parameter Database

Set Dip Switch 2 (SW600) to ON and allow the board to completely boot up (Time approximately 1.5 minutes). After the first boot up, power down the board and reset the Dip Switch 2 to OFF.

The following parameters which are unique to each BCM will need to be set via FIPS after the Dips Switch2 is set to OFF and power is reapplied:

1. w 705 xxx.xxx.xxx.xxx {IP Address of Baton!}
2. w 706 xxx.xxx.xxx.xxx {Subnet Mask of Baton!}
3. w 708 xxx.xxx.xxx.xxx {Gateway IP Address}
4. w 704 xxxxx {ColorCode of Baton!}
5. w 500 xxx.xxx.xxx.xxx {IP Address of C!--to receive Alarm Traps}
6. a 301 xxx.xxx.xxx.xxx {IP address of TFTP server for downloads}

Initializing New Parameters

If you did not reset the Parameter Database and you are upgrading from RFB 1.1.0 or earlier RFB software, you will need to perform the following FIPS command to initialize any NEW parameter.:

1. w 213 4 {set Maintenance Path (OCM/BCM) to 9600 baud -- added in RFB 1.2.0}

8 NEW INSTALLATIONS

8.1 WMG

For new install please refer to the manuals and the 12M document and refer to the following documents for SS7 and Libretto .

8.1.1 SS7:

Introduction

This document outlines site-specific WMG software installation and upgrade procedures for SS7. All procedures outlined in this document **must** be completed in the order presented. These procedures are used after initial factory software load and “burn-in”, or when a software upgrade is delivered to an existing installation.

For upgrades from one version to another, specific steps must be taken as outlined in the “Archive Configuration Files” and “Upgrade” sections of this document. WMG software installation will overwrite all of the WMG configuration files. You **must** save copies of the site-specific configuration files currently in use so that the WMG can be quickly re-configured.

This document does **not** address any critical or major CRs at time of release. Work-arounds for critical and major CRs will be provided in a separate document derived from the DDTS *Release Notes* enclosure.

System Identification

Refer to WMG-A! BOM Structure Tree for WMG System for Hardware components and their associated Part Numbers

The following table describes applicable third party software (COTS) required for the China WMG. These revisions are subject to change for each release.

Table 1-2: COTS CI's

Software/Firmware Desc.	Version	Used In/By	Comments
Motorola MVME172 running VxWorks	5.3	SS7	DCC card on CP
Motorola dci360 running VxWorks	5.3	SS7	DCI card on UCC

References

1. WMG TRR Package
2. *WMG S/W Load and Functional Test Procedures*, 12M80402F12

3. *WMG Software Release Procedures, v1.0*

4. *WMG-A! BOM Structure Tree*

Scope and Limitations

Prior to installation, refer to the WMG TRR Package for list of COTS software/firmware version numbers and revisions for this release.

The symbol "cp1>", "omc>", "tserv1", or "fsv>" is used to identify the command prompt on the subsystem. The "cp1>" symbol is used to identify both CP1 and CP2; substitute "cp2>" as appropriate when working on the alternate CP.

The OMC and CP tape drive identifier is 0lb (zero-l-b), but is subject to change.

These procedures assume a correctly installed operating system and basic factory-installed configuration as specified in the *WMG S/W Load and Functional Test Procedure*.

This procedure assumes a redundant system configuration. For non-redundant configurations, omit references to cp2.

These procedures assume you know how to use the vi editor.

Note: Problem:SS7 install procedure is incorrect.

It does not instruct what directory to download the software in. It assumes the software is on the OMC and when the procedure is followed the system reports an error when tar extract is done on the ss7-tar_file.

Behavior: The OMC reports " tar: ss7-tar_file: no such file or directory.

Suggestion: Need steps in the procedure that download tape and extract tar files. Was able to work around this problem in SITG by moving the tar_file on the tape to ss7-tar_file.

Note: SS7 Application Installation

The SS7 application software is installed from the OMC. The OMC installation must be completed prior to executing instructions in this section.

Unloading SS7

```
omc> cd /wmgucc
omc> tar -xvf ss7-tar_file
omc> chmod +x ss7_app_install
```

Installing SS7

1. Verify the mode was changed to executable for group and others. Type:
ls -al ss7_app_install <Return>
2. Execute the script. Type:
./ss7_app_install <Return>
3. Extract the ss7.tar file. When prompted by "Extract ss7.tar file? Y,N [Y]", type:
Y <Return>
4. Do not extract the ss7.tar file from tape. When prompted by "Extract ss7.tar from DAT tape? Y,N [N]", type:
N <Enter>
5. Enter the install directory. When prompted by "Input the install directory location (eg. /wmgucc)", type
/wmgucc <Return>

6. The following messages will appear on the screen:

Restoring SS7 files on OMC, please wait

Extracting ss7.tar file....

Press enter to continue...

Type: **<Return>**

Answer according to the system configuration the question, "Does the system have redundant CPs? (Y/N): [Y]."

Enter the IP addresses of the CPs, OMC, and DCC. The assigned IP addresses will be printed after they are entered.

Enter the number of UCCs in the system that are configured as SS7.

Enter the processor ID of each UCC.

The following messages should appear as verification that the SS7 application software was successfully installed:

Working

SS7 Installation Complete

******* SS7 Application Installation was Successful *******

Press enter to exit

Type: <Return>
 The SS7 application install is complete.

8.1.2 LIBRETTO!

8.1.2.1 Introduction

This part of the note outlines site-specific WMG Libretto! software installation and upgrade procedures.

This document does **not** address any critical or major CRs at time of release. Work-arounds for critical and major CRs will be provided in a separate document derived from the DDTs *Release Notes* enclosure.

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System Identification

Libretto! Media Part Number: 0180302F86
 Libretto! Media Process Part Number: 87R86843G01
 Libretto! S/W License Document: 82805 75R01
 Libretto! S/W License: PTVN1007A

The following table describes applicable third party software (COTS) required for the WMG Libretto!. These revisions are subject to change for each release.

Table 1-3: COTS CI's

Software/Firmware Desc.	Version	Used In/By	Comments	MOT Part #
Sun Solaris OS	2.5.1	Libretto!		
Sun Solaris patches	Generic_103640-12	Libretto!		
X Windows libraries	X11 R5	Libretto!		
Motif	1.2	Libretto!		

References

1. WMG TRR Package

Scope and Limitations

The "pkgadd" command must be run as the "super-user" (root).

The symbol "SOL2.5.1>" is used to identify the command prompt on the Solaris system.

Default answers to questions are found in brackets i.e., [yes].

Currently, the tape drive identifier is assumed to be 0lb (zero-l-b), but this may vary for a given Solaris system.

Minimum System Requirements

1. Sparc Workstation with a 4mm DAT drive and a graphical display terminal.
2. 64 MB of RAM.
3. 25 MB of disk space.
4. The Libretto! application needs to be installed in a separate box from the OMC. The Libretto! packaging script will NOT install if an user attempts to install the Libretto! application on the same machine as the OMC.

8.1.2.2 **Libretto! Installation and Upgrade**

The Libretto! installation script will prompt for a LIBRETTOHOME directory. Before proceeding with the installation, decide where you want to install the Libretto! application. If this path already exist, it must be a directory name with "read, write, and execute" permissions enabled; if it does not exist, it will be created.

System Login

From a System Administration window, log in as "root".

```
SOL2.5.1> su root
```

Old Package Removal

1. Verify the current version of the WMG Libretto! application.

```
SOL2.5.1> pkginfo -l WMG-Lbrto.*
```

2. Remove the current version of the Libretto! application.

```
SOL2.5.1> pkgrm WMG-Lbrto.*
```

Pkgrm will ask if you want to remove this package. Type "yes".

Verify that pkgrm reports "Removal of WMG-Lbrto was successful".

New Package Installation

1. Insert Libretto! DAT tape into DAT tape drive.
2. Run pkgadd utility.

SOL2.5.1> pkgadd -d /dev/rmt/0lb

When pkgadd asks which packages to install, press <return> to install "all" packages.

When the Libretto! installation script asks "Where should Libretto! be installed?", type the UNIX pathname for the LIBRETTOHOME directory and press <return>. If the LIBRETTOHOME path name can not be accessed or is not a directory, the Libretto! installation script will repeat the prompt asking "Where should Libretto! be installed?"

As pkgadd installs the Libretto! package, a scrolling list of files will be displayed indicating the progress of the installation.

Verify that pkgadd reports "Installation of WMG-Lbrto was successful".

3. Rewind and eject DAT tape:

SOL2.5.1> mt -f /dev/rmt/0lb rewoffl

4. END of Installation Procedure for Libretto!

8.1.2.3 Libretto! Startup

System Login

Log in as a user.

Run the Libretto! startup script

Run the Libretto! startup script located at the <LIBRETTOHOME>/bin directory.

SOL2.5.1> <LIBRETTOHOME>/bin/libretto.sh

Error Conditions

If too many GUI applications are currently running on the same system where the Libretto! application resides, the following error may result:

X Error of failed request: BadDrawable (invalid Pixmap or Window parameter)

Major opcode of failed request: 14 (X_GetGeometry)

Resource id in failed request: 0x0

Serial number of failed request: 394

Current serial number in output stream: 394

This problem is due to the Libretto! application not having enough X display resources. Exit out as many GUI windows as possible and restart.

8.2 RF-CONDUCTOR!

For new install please refer to the manuals and the 12M document, except for the following sections included below:

8.2.1 INSTALLATION :

The RF-C! has a new, more automated installation process. This procedure collects the changes required to various system configuration files (hosts, ifconfig, netmasks and others) and automatically inserts the appropriate changes in each file. In addition, the existing configuration is preserved, and can be referred to for use or modification in future installs and upgrades. The new installation also handles both redundant and non-redundant installations.

8.2.2 Overview

- A. The Check List
- B. Unpacking the RF-C! package from tape
- C. Running the installation scripts
- D. Guide lines for installing and upgrading the RF-C! on redundant systems
- E. SSCB Installation
- F. Verify the RF-C! installation
- G. List of configuration files being backed up during the installation
- H. Examples
- I. Frequently Asked Questions
- J. Installation of HA on any SUN Workstation

A. The Check List

Following is a list of tasks need to be performed in order to successfully install the RF-C!. This list will also serve as a guide line on how to use this document to install the RF-C! .You may first read this entire document to obtain general information about how the install scripts work, then use the check list below to guide you through the actual installation process.

See also the installation process flow chart below for an overall view of the process.

1. Unpack the RF-C! package from tape.
2. Decide what mode to run the installation scripts (see the Running the installation scripts section for help in making this decision).
3. Go to Running the installation scripts section and find information about how to set up and run the installation scripts.

4.If installing a redundant system then read the Guide lines for installing and upgrading the RF-C! on redundant systems section to obtain information about redundant systems requirements.

5.Run the installation scripts as described in step 3.

6.If SSCB functionality is required, then, before rebooting the system, install the VME patch and load the SSCB driver. See SSCB Installation section for additional instructions.

7.Reboot the systems.

8.Verify the newly installed systems.

B.Unpacking the RF-C! package from tape

When you receive the RF-C! installation tape, you must first unpack the RF-C! package from the tape before starting the actual installation.

1.Insert the tape into the local system tape drive.

2.Log on to the system as root (assuming that you already has Solaris 2.5.x installed on the system).

3.Type: **mkdir /tmp/rfc**

4.Type: **cd /tmp/rfc**

5.Type: **mt -f /dev/rmt/0lb status** to verify that the tape drive is accessible. An error will be displayed if the drive is not accessible. If the tape drive is not accessible then you may want to make sure the cables are connected correctly then reboot the system (shutdown -i6 -g0 -y). If the problem persists then contact the system administrator.

6.Type: **tar xvf /dev/rmt/0lb**

7.Type: **cd /tmp/rfc/Install**

8.Run the install scripts as described in the next section, Running the installation scripts.

C.Running the installation scripts

The installation scripts may be executed in 5 different modes. In order to install the RF-C!, you will only need to use one of the modes described here:

1.The automated factory default mode.

2.The automated field install mode using a predefined setup file.

3.The interactive mode (customize mode).

4.The DEBUG mode.

The automated factory-default mode can only be used in factory environments.

The automated field install mode and the interactive mode may be executed in any kinds of environments (factory, laboratory or production sites).

The RF-C! upgrade mode can only be used for upgrading the RF-C!

The DEBUGmode can only be used in the development environment.

Depending on your environment and your requirement, you may choose to use one of the above modes.

In general, when you are outside of the factory and the development environment, it is best to use the automated field-install mode. The interactive mode is useful when you want to go through the installation process step by step in order to correct some RF-C! configuration problems.

To quickly get usage information from the install scripts, you may execute the main script as follows:

```
./install.sh -h
```

1.The automated factory-default mode

While in factory, you may easily install the RF-C! as follows:

Non-redundant systems:

```
cd /tmp/rfc/Install  
./install.sh -F
```

Redundant systems:

Please read the Guide lines for installing and upgrading the RF-C! on redundant systems section before running the install scripts.

```
cd /tmp/rfc/Install  
./install.sh -Fr
```

2.The automated field installation mode

You may use this mode in the production site, in the lab or in the factory, provided that you have correctly created the setup file for each environment.

The automated field installation mode requires a predefined setup file. The RF-C! installation tape includes some of the examples for the setup files. You may copy the files and customize them for your environment. They are located in /tmp/rfc/Install in the format of rfcinstall.machine_name, where machine_name is the name of your machine.

This mode is useful in situations when the installer is not required to completely understand the system in order to run the install. It is also useful when you want to avoid human errors and to avoid repetitive work.

After you have verify the correctness of the setup file, you may then run the install scripts as follows:

```
./install.sh -f rfcinstall.machine_name
```

Note that, changing the setup file is the most critical part of the whole process. You may want to take extra precaution while updating the setup file. Once you have a correct setup file designed specifically for your network environment, then it is really easy to run the installation scripts using your setup file.

In the event that the installation failed (eg., you'd lost connection to the network), then you must carefully review your setup file then rerun the installation scripts.

There is no penalty in re-running the scripts. All changes to the system are automatically staged 10 times. You can always look for the old version of the system configuration files (such as /etc/inet/hosts file) in the format of original_file_name.#_ at the same location (ie., in the case of /etc/inet/hosts file, you can find the previous version of it at /etc/inet/hosts.1_).

Once you have successfully created a setup file for used to install the RF-C! in your environment, it is a good idea to save it off somewhere so you may be able to re-use it in the future. Saving the file on tape or diskette would be best because in the event of the system crash (eg, disk crash), you can still quickly recover the system.

3.The interactive mode

You may use this mode in the lab, in the factory or at the production site.

In the interactive mode, the install scripts will guide the process using a menu driven program. Every steps must be entered correctly in order for the installation to be successful. This mode requires a direct interface between the installer and the program. The installer must understand every step of the process.

Following are the definitions for the required parameters:

Note that, the default value were selected for the most common installation scenario.

Definitions for input parameter

Parameter Name	Default Value	Meaning
REDUNDANT	n	Specify whether to install a non-redundant or a redundant system

CONFIGOS	y	Specify whether to reconfigure the operating system parameters (such as the system IP address)
CONFIG	a	Specify which side (a or b) of the redundant systems is going to be installed (select "a" for a non-redundant systems)
FormatShrDsk	n	Specify whether to reformat the shared disk (in general, this option should be "n")
ConfigXyplex	y	Specify whether to configure the Xyplex
InstallPrtPkg	y	Specify whether to install the printer package
InstallHAPkg	n	Specify whether to install the HA package (this option only applied for redundant systems)
InstallRfcPkg	y	Specify whether to install the RF-C! software
RebootSystem	y	Specify whether to reboot the system after the installation is complete (this option is usually "y")
SSNPATH	/home/.ssn	Specify the path name for the license file

To run in the interactive mode, type `./install.sh`, without any argument.

4 .The DEBUG mode

The installation scripts may also be executed in debugging mode when you want to fix some problems with the scripts (or to add new features to the scripts).

In order to run in DEBUG mode, you must setup your shell environment as follows:

Log in as yourself.

Set the DEBUG shell environment as follows:

In Korn shell do: export DEBUG=1

In csh do: set DEBUG=1

Optionally, you may set TOP as follows (the default value for TOP is \$HOME/rfcinsttest):

In Korn shell do: export TOP=\$HOME/MyCloneTree

In csh do: set TOP=\$HOME/MyCloneTree

Run the scripts as usual (ie., ./install.sh)

When running in this mode, the scripts will automatically set up a clone environment in your home directory and try to emulate the actual install. All changes to the system files such as /etc/hosts will be done in your clone environment.

This mode is helpful when you make some small changes to the scripts and you'd like to test your changes quickly without having to fully re-install the RF-C!.

D.Guide lines for installing the RF-C! on redundant systems

In general, it is really simple to install a non-redundant system. The installation scripts should completely automate the process for you. In contrary, there is no easy way to install RF-C! on the redundant systems.

The main problem with installing RF-C! on the redundant systems is that each one of the systems is not independent with each other. Changes on system-A will affect the behavior of system-B. This is the normal nature of redundant systems. Therefore, the whole installation process can only be automated to a certain extent. Some precautions will be required in order to successfully install the RF-C!.

Guide lines for installing RF-C! on the redundant systems:

Note that as HA package resides on the local hard drives (and NOT on the shared partition), it will be installed on both sides A and B.

1.If the RF-C! is up and running, then make sure side A is the primary (active) side. Otherwise, go to the next step.

2.Start installing side A.

3.When finish installing side A, DO NOT reboot the system immediately.

- 4.Start installing side B and DO NOT reboot side B yet.
- 5.If SSCB is required, then go to SSCB Installation section for other instructions.
- 6.Reboot side A and wait for HA to come up all the way.
- 7.Reboot side B and wait for HA to come up and side B became the secondary host.
- 8.Verify the systems.

E.SSCB Installation

The following steps describe how to install and configure SSCB. It is assumed that the RF-C! and other optional packages were already installed on the systems

(redundant or non-redundant) and that the machines are in the state of ready to be rebooted to bring up the RF-C! to the new installed level. (In other word, if

SSCB is not required for your systems, then you can skip the following section and just reboot the systems).

- 1.Install the VME patch as follows:
 `cd /tmp/rfc`
 `pkgadd -d `pwd` THEMISvme`
 Press <ENTER> at the following prompt:
 Where should the driver objects be installed [/kernel/drv]?
- 2.Reboot the system:
 `shutdown -y -i6 -g0`
- 3.Load the SSCB driver:
 `cd /home/SSCB/sscbdriver`
 `./attach_sscb`
- 4.Reboot the system again:
 `shutdown -y -i6 -g0`
- 5.Verify SSCB:
 `cd /home/SSCB/sscbtests`
 `./pilledtest`
 Watch the led's on the SSCB card to see if they are flashing as expected.
- 6.If you are installing redundant systems, you must:
 Complete all of the above steps on side A,
 Wait for side A to come up all the way and became primary host,
 Repeat all of the above steps on side B

F.Verify the RF-C! installation

After installing the RF-C! you should verify whether the RF-C! was correctly installed.

Changing the Training Sample Length for txttype RF_BATON:

- 1) vi rfc.cfg
- 2) Search for RF_BATON (esc /RF_BATON), just above that line you will find trainingSampleLength 10, replace 10 with 14 .
- 3) Also check that Additional NID frames is set to 120.

There are several ways to verify the installation:

Verifying the installation before rebooting the system.

Some of the system configuration information you may want to verify right after the install scripts have finish but right before rebooting the systems.

Sometimes it is better to discover problem before the system is rebooted.

Verify that all the symbolic links are pointing to the correct places:

- /home/rfc is a directory, for non-redundant systems.
- /home/rfc -> /shared/rfc, for redundant systems.
- /home/rfc/current -> vx.y.z, where x, y and z are the version numbers.
- RFC_main -> /home/rfc/current/RFC_main_vx.y.z for non-redundant systems.
- RFC_main -> /shared/rfc/current/RFC_main_vx.y.x for redundant systems.
- RFC_snmpMA -> /home/rfc/current/RFC_snmpMA_vx.y.z for non-redundant systems.
- RFC_snmpMA -> /shared/rfc/current/RFC_snmpMA_vx.y.x for redundant systems.
- RFC_swdSA -> /home/rfc/current/RFC_swdSA_vx.y.z for non-redundant systems.
- RFC_swdSA -> /shared/rfc/current/RFC_swdSA_vx.y.x for redundant systems.

Verify the content of the following RF-C! configuration files:

- /usr/HA/ha_file/RFC_standby
- /home/rfc/current/gps.cfg
- /home/rfc/current/rfc.cfg
- /home/rfc/current/snmpMA.cfg
- /home/rfc/current/rfc.passwd
- /home/rfc/current/rfc.lic

Verify the content of the following operating system configuration files:

- /etc/hosts - should contain correct host names and IP addresses.
- /etc/netmasks - should contain correct network masks.
- /etc/inittab - for redundant systems, this file should not have any line for starting up the RF-C!. HA will take care of starting up and

shutting down the RF-C!

Verifying the installation after the system is rebooted.

After rebooting the system, you must verify whether the RF-C! was correctly started.

Verify whether the RF-C! is running using the ps command as follows:

```
ps -ef | grep -i rfc
```

For both primary redundant and non-redundant systems, you should see the following three RF-C! processes:

```
RF_C_main, RF_C_swdSA, RF_C_snmpMA
```

For a secondary redundant system, you should see only the RF_C_main process running.

For redundant system, you must also verify whether HA is running using the ps command:

```
ps -ef | grep -i ha
```

For both primary redundant and secondary redundant systems, you should see the following processes:

```
HA.x, ha_mai.x, HA_remote.x
```

For redundant system, you must also verify whether /shared was correctly mounted using the mount command (without any arguments).

For the primary redundant system, you should see the /shared filesystem being read/write.

For the secondary redundant system, you should see the /shared filesystem being read only.

G.List of configuration files being backed up during the installation

While installing the RF-C! using the install scripts, if the scripts found that there exist previous versions of the RF-C! and system configuration files, then they will save them in a separate directory.

The scripts will try to keep 10 different versions of the same file every time an installation is performed.

The older versions of the files will be saved in the following format:

```
Original_Name.#_
```

where, 'Original_Name' is the name for the original file, '#' is the sequence number which will be incremented every time a new file will be saved.

Files whose name containing no '#_' suffixes are the most current file (the newly installed file). Files whose names containing the '#_' suffixes are ranging from newest with smallest number to oldest with largest number.

The RF-C! configuration files are saved in /home/SavCfgDir directory.

The operating system configuration files are saved in the same locations where they are found (eg. the backup versions for the file /etc/inet/hosts can be found in /etc/inet/hosts.1_, /etc/inet/hosts.2_, /etc/inet/hosts.3_, etc.)...

List of the RF-C! configuration files being backed up by the install scripts:

/home/SavCfgDir/alarm.cfg
/home/SavCfgDir/gps.cfg
/home/SavCfgDir/rfc.cfg
/home/SavCfgDir/snmpMA.cfg
/home/SavCfgDir/rfc.lic
/home/SavCfgDir/rfc.passwd
/home/SavCfgDir/RfcDbfile

List of the operating systems configuration files being backed up by the install scripts:

/etc/hostname.le0
/etc/hostname.qe0
/etc/hostname.qe1
/etc/inittab
/etc/nodename
/etc/default/login
/etc/inet/hosts
/etc/inet/netmasks
/etc/inet/inetd.conf
/sbin/rcS

H.Examples

In the following section we will look at three examples of the RF-C! installation:

Example 1 : Installing a non-redundant system using the automated field install mode.

Example 2 : Installing a redundant system using the automated field install mode.

Example 3 : Installing a non-redundant using the interactive mode.

Example 1: Installing a non-redundant system using the automated field install mode

While running in the automated field install mode, all you have to do is to modify the installation setup file for your environment then run the scripts using the setup file.

1.Modify the setup file (rfcinstall.machine_name) as follows:

(Note: Bold type are values that must be updated as appropriate)

```
#####
#                                     #
# Predefined users input configuration for rfc install.           #
# Use this file to run the install scripts unattended.          #
#                                     #
# Do not remove lines from this file even the record is not used. The install #
# scripts will ignore unused records.                             #
#                                     #
# This configuration file is accessed by the install scripts as follows:  #
# ./install.sh -f this-file                                         #
#                                     #
# This configuration file is prepared for installing RF-C! in the lab.  #
# It is configured to install a NONREDUNDANT system on side-A (labrfc1a) #
# You may make a copy of this file and change it as appropriate.    #
#                                     #
#####

# -----
# Install options.
#
REDUNDANT    n    # Redundant / non-REDUNDANT installation.
CONFIGOS     y    # Configure the system files (hosts, netmasks ...).
TCPIPCONFIG  y    # Configure hosts file.
CONFIG       a    # Which OS side to install.
FormatShrDsk n    # Format shared disk for REDUNDANT system.
ConfigXyplex y    # Configure Xyplex terminal server.
InstallPrtPkg y   # Install HP printer package.
InstallHAPkg n    # Install HA for REDUNDANT system.
InstallRfcPkg y   # Install RFC! package.
RebootSystem n    # Reboot the system when complete.

# -----
# License number and path name for the license file.
#
LicenseNumber 123456
SSNPATH       /home/.ssn

# -----
```

```
# Xyplex MAC address.
#
XyplexMacAddr 080087 # The first 6 digits of Xyplex MAC address.

# -----
# Node name, host names, ip addresses.
#
NODENAME labrfc1a # Node name of the current host.

# These will be used on both REDUNDANT and non-REDUNDANT installations.
# For REDUNDANT installations, these values will be the same as the ones
# defined for either side-A or side-B.
#
LE0_NAME labrfc1a # Name of the control LAN port.
QE0_NAME labrfcw1a # Name of the WMTP LAN port.
QE1_NAME labrfci1a # Name of the IPP/OPP LAN port.

# These will be used on both REDUNDANT and non-REDUNDANT installations.
# For REDUNDANT installations, these values will be the same as the ones
# defined for either side-A or side-B.
#
LE0_IPAD 199.4.71.215 # IP for the current control LAN port.
QE0_IPAD 199.4.70.58 # IP for the current WMTP LAN port.
QE1_IPAD 199.4.72.121 # IP for the current IPP/OPP LAN port.

# Router addresses.
#
ROUTER_CTL 199.4.71.1 # IP for the Router on the control port.

# -----
# Netmasks
#

# These will be used on both REDUNDANT and non-REDUNDANT installations.
# For REDUNDANT installations, these values will be the same as the ones
# defined for either side-A or side-B.
#
LE0_IPAD_NetAddr 199.4.71.0 # Network address for the control LAN port.
```

```

QE0_IPAD_NetAddr 199.4.70.0 # Network address for the WMTP LAN port.
QE1_IPAD_NetAddr 199.4.72.0 # Network address for the IPP/OPP LAN.

#
LE0_IPAD_NetMask 255.255.255.0 # netmask for the control LAN port.
QE0_IPAD_NetMask 255.255.255.0 # netmask for the WMTP LAN port.
QE1_IPAD_NetMask 255.255.255.0 # netmask for the IPP/OPP LAN port.

```

2.Run the install scripts:

```

./install.sh -f rfcinstall.machine_name
(where machine_name is the name of your machine).

```

Example 2: Installing a redundant system using the automated field install mode

While running in the automated field install mode, all you have to do is to modify the install setup file for your environment then run the scripts using the setup file.

1.Modify the setup file (rfcinstall.machine_name) as follows:

(Note: Bold type are values that must be updated as appropriate)

```

#####
#                                     #
# Predefined users input configuration for rfc install.           #
# Use this file to run the install scripts unattended.           #
#                                     #
# Do not remove lines from this file even the record is not used. The install #
# scripts will ignore unused records.                               #
#                                     #
# This configuration file is accessed by the install scripts as follows: #
# ./install.sh -f this-file                                         #
#                                     #
# This configuration file is prepared for installing RF-C! in the lab. #
# It is configured to install a REDUNDANT system on side-A (labrfc1a) #
# You may make a copy of this file and change it as appropriate.   #
#                                     #
#####

```

```
# -----
# Install options.
#
REDUNDANT    y    # Redundant / non-REDUNDANT installation.
CONFIGOS     y    # Configure the system files (hosts, netmasks ...).
TCPIPCONFIG  y    # Configure hosts file.
CONFIG       a    # Which OS side to install.
FormatShrDsk y    # Format shared disk for REDUNDANT system.
ConfigXyplex y    # Configure Xyplex terminal server.
InstallPrtPkg y    # Install HP printer package.
InstallHAPkg y    # Install HA for REDUNDANT system.
InstallRfcPkg y    # Install RFC! package.
RebootSystem n    # Reboot the system when complete.

# -----
# License number and path name for the license file.
#
LicenseNumber 123456
SSNPATH       /home/.ssn

# -----
# Xyplex MAC address.
#
XyplexMacAddr 080087 # The first 6 digits of Xyplex MAC address.

# -----
# Node name, host names, ip addresses.
#
NODENAME      labrfc1a # Node name of the current host.

# These will be used on both REDUNDANT and non-REDUNDANT installations.
# For REDUNDANT installations, these values will be the same as the ones
# defined for either side-A or side-B.
#
LE0_NAME      labrfc1a # Name of the control LAN port.
QE0_NAME      labrfcw1a # Name of the WMTP LAN port.
QE1_NAME      labrfci1a # Name of the IPP/OPP LAN port.
```

```
# Side-A and side-B setups are only used when installing REDUNDANT systems.
# These will be ignored when installing a non-REDUNDANT system.
#
LE0_NAME_A      labrfc1a    # Name of the control LAN port side A.
QE0_NAME_A      labrfcw1a   # Name of the WMTP LAN port side A.
QE1_NAME_A      labrfci1a  # Name of the IPP/OPP LAN port side A.

LE0_NAME_B      labrfc1b    # Name of the control LAN port side B.
QE0_NAME_B      labrfcw1b   # Name of the WMTP LAN port side B.
QE1_NAME_B      labrfci1b  # Name of the IPP/OPP LAN port side B.

# These will only be used for REDUNDANT installation.
# These will be ignored when installing a non-REDUNDANT system.
#
REDACT_LE0_NAME labrfc1     # Name of the take-over control LAN port.
REDACT_QE0_NAME labrfcw1   # Name of the take-over WMTP LAN port.
REDACT_QE1_NAME labrfci1   # Name of the take-over IPP/OPP LAN port.

# These will be used on both REDUNDANT and non-REDUNDANT installations.
# For REDUNDANT installations, these values will be the same as the ones
# defined for either side-A or side-B.
#
LE0_IPAD        199.4.71.215 # IP for the current control LAN port.
QE0_IPAD        199.4.70.58 # IP for the current WMTP LAN port.
QE1_IPAD        199.4.72.121 # IP for the current IPP/OPP LAN port.

# Side-A and side-B setups are only used when installing REDUNDANT systems.
# These will be ignored when installing a non-REDUNDANT system.
#
LE0_IPAD_A      199.4.71.215 # IP for the control LAN port side A.
QE0_IPAD_A      199.4.70.58 # IP for the WMTP LAN port side A.
QE1_IPAD_A      199.4.72.121 # IP for the IPP/OPP LAN port side A.

LE0_IPAD_B      199.4.71.216 # IP for the control LAN port side B.
QE0_IPAD_B      199.4.70.59 # IP for the WMTP LAN port side B.
QE1_IPAD_B      199.4.72.122 # IP for the IPP/OPP LAN port side B.

# These will only be used for REDUNDANT installation.
# These will be ignored when installing a non-REDUNDANT system.
#
REDACT_LE0_IPAD 199.4.71.226 # IP for the take-over control LAN port.
REDACT_QE0_IPAD 199.4.70.60 # IP for the take-over WMTP LAN port.
```

```
REDACT_QE1_IPAD 199.4.72.123 # IP for the take-over IPP/OPP LAN port.

# Router addresses.
#
ROUTER_CTL      199.4.71.1   # IP for the Router on the control port.

# -----
# Netmasks
#

# These will be used on both REDUNDANT and non-REDUNDANT installations.
# For REDUNDANT installations, these values will be the same as the ones
# defined for either side-A or side-B.
#
LE0_IPAD_NetAddr 199.4.71.0 # Network address for the control LAN port.
QE0_IPAD_NetAddr 199.4.70.0 # Network address for the WMTP LAN port.
QE1_IPAD_NetAddr 199.4.72.0 # Network address for the IPP/OPP LAN.

# Side-A and side-B setups are only used when installing REDUNDANT systems.
# These will be ignored when installing a non-REDUNDANT system.
#
LE0_IPAD_NetAddr_A 199.4.71.0 # Network address for the control LAN port
                        #side A
QE0_IPAD_NetAddr_A 199.4.70.0 # Network address for the WMTP LAN port
                        # side A.
QE1_IPAD_NetAddr_A 199.4.72.0 # Network address for the IPP/OPP LAN side A.

LE0_IPAD_NetAddr_B 199.4.71.0 # Network address for the control LAN port
                        # side B.
QE0_IPAD_NetAddr_B 199.4.70.0 # Network address for the WMTP LAN port
                        # side B.
QE1_IPAD_NetAddr_B 199.4.72.0 # Network address for the IPP/OPP LAN side B.

# These will only be used for REDUNDANT installation.
# These will be ignored when installing a non-REDUNDANT system.
#
REDACT_LE0_IPAD_NetAddr 199.4.71.0 # Network address for the take-over
                        # control LAN port.
REDACT_QE0_IPAD_NetAddr 199.4.70.0 # Network address for the take-over
                        # WMTP LAN port.
REDACT_QE1_IPAD_NetAddr 199.4.72.0 # Network address for the take-over
```

```
# IPP/OPP LAN port.

# There is no need to setup different masks for side A or side B
# they should be the same!
#
LE0_IPAD_NetMask      255.255.255.0 # netmask for the control LAN port.
QE0_IPAD_NetMask      255.255.255.0 # netmask for the WMTP LAN port.
QE1_IPAD_NetMask      255.255.255.0 # netmask for the IPP/OPP LAN port.

# These will only be used for REDUNDANT installation.
# These will be ignored when installing a non-REDUNDANT system.
#
REDACT_LE0_IPAD_NetMask 255.255.255.0 # netmask for the take-over control
                        # LAN port.
REDACT_QE0_IPAD_NetMask 255.255.255.0 # netmask for the take-over WMTP
                        # LAN port.
REDACT_QE1_IPAD_NetMask 255.255.255.0 # netmask for the take-over IPP/OPP
                        # LAN port.
```

2.Run the install scripts as follows:

```
./install.sh -f rfcinstall.machine_name
(where machine_name is the name of your machine).
```

Example 3: Installing a non-redundant system using the interactive mode

Following is a sample run of the installation scripts using the interactive mode (text in Bold type are inputs from the user):

```
cd /tmp/rfc/Install
./install.sh
```

Current installation parameters:

```
[1] REDUNDANT=    y  - install a redundant system.
[2] CONFIGOS=    y  - configure the OS for used by RFC.
[3] CONFIG=      a  - side of the OS to configure (a or b).
[4] FormatShrDsk= y  - format shared disk for redundant system.
```

- [5] ConfigXyplex= y - configure Xyplex chassis.
- [6] InstallPrtPkg= y - install printer software.
- [7] InstallHAPkg= y - install HA package.
- [8] InstallRfcPkg= y - install RF-C! package.
- [9] RebootSystem= n - reboot the system after installation completed.
- [10] SSNPATH=/home/.ssn - path to RFC Base License serial number file.

Are these correct? y or [n] n

Which item number would you like to change (n for none)? 1

Install a redundant system (y/n) [y] n

Current installation parameters:

- * [1] REDUNDANT= n - install a redundant system.
- [2] CONFIGOS= y - configure the OS for used by RFC.
- [3] CONFIG= a - side of the OS to configure (a or b).
- [4] FormatShrDsk= y - format shared disk for redundant system.
- [5] ConfigXyplex= y - configure Xyplex chassis.
- [6] InstallPrtPkg= y - install printer software.
- [7] InstallHAPkg= y - install HA package.
- [8] InstallRfcPkg= y - install RF-C! package.
- [9] RebootSystem= n - reboot the system after installation completed.
- [10] SSNPATH=/home/.ssn - path to RFC Base License serial number file.

Are these correct? y or [n] n

Which item number would you like to change (n for none)? 4

Format shared disk for redundant system (y/n) [y] n

Current installation parameters:

- * [1] REDUNDANT= n - install a redundant system.
- [2] CONFIGOS= y - configure the OS for used by RFC.
- [3] CONFIG= a - side of the OS to configure (a or b).
- * [4] FormatShrDsk= n - format shared disk for redundant system.
- [5] ConfigXyplex= y - configure Xyplex chassis.
- [6] InstallPrtPkg= y - install printer software.
- [7] InstallHAPkg= y - install HA package.
- [8] InstallRfcPkg= y - install RF-C! package.
- [9] RebootSystem= n - reboot the system after installation completed.
- [10] SSNPATH=/home/.ssn - path to RFC Base License serial number file.

Are these correct? y or [n] n

Which item number would you like to change (n for none)? 7

Install HA package (y/n) [y] n

Current installation parameters:

- * [1] REDUNDANT= n - install a redundant system.
 - [2] CONFIGOS= y - configure the OS for used by RFC.
 - [3] CONFIG= a - side of the OS to configure (a or b).
 - * [4] FormatShrDsk= n - format shared disk for redundant system.
 - [5] ConfigXyplex= y - configure Xyplex chassis.
 - [6] InstallPrtPkg= y - install printer software.
 - * [7] InstallHAPkg= n - install HA package.
 - [8] InstallRfcPkg= y - install RF-C! package.
 - [9] RebootSystem= n - reboot the system after installation completed.
 - [10] SSNPATH=/home/.ssn - path to RFC Base License serial number file.
- Are these correct? y or [n] y

```
install.sh: *** Beginning RF-C! System Installation for fwxs10 at 17:01:25 Apr 09,1997
RFC Base License serial number [123456]? 123456
GetSysSerial: RFC Base License serial number: 123456
```

```
SavCfgFiles: Found previous version of RF-C! installed.
SavCfgFiles: Saving the old configuration files in /home/SavCfgDir.
```

```
install.sh: *** Configuring Solaris & Environment for RF-C! use
os_config_install: Modifying /etc/hosts file for side "a"
os_config_install: Modifying /etc/hostname.le0 file for side a
os_config_install: Initializing additional SBus Ethernet Ports 0 & 1
os_config_install: Modifying /etc/inittab to allow Serial Port ttyc
os_config_install: Creating /etc/notrouter to disable IP routing
os_config_install: Modifying /etc/default/login to allow remote root access
os_config_install: Modifying /etc/netmasks for network connectivity
os_config_install: Modifying /etc/inetd.conf to enable tftp boot
os_config_install: Modifying /etc/nodename for side a
```

CONFIRM INFORMATION

- [1] Nodename: rfcactl
- [2] Control interface le0 hostname: rfcactl
- [3] IP address: 177.12.77.13
- [4] Terminal interface qe0 hostname: mfgrfc1a
- [5] IP address: 199.4.77.20
- [6] RF interface qe1 hostname: rfcaipp
- [7] IP address: 177.11.77.13
- [8] Default router IP address: 180.18.128.1

Are these correct? y or [n] y

EditHostFile: Setting nodename, host names and addresses, default router

GetXyplexMacAddr: XyplexMacAddr=acfea

GetXyplexMacAddr: *** Patching in Xyplex addresses, downloads

MAC_ADDR= "16#0"

MAC_ADDR5="16#4"

MAC_ADDR6="16#5"

ConfigXyplex: *** Xyplex support installed

***install.sh: Installing Printer Setup package

install.sh: *** Running RF-C! installation script

rfc_install.sh: Doing RF-C! set up

RfcShutdown: Shutdown of RF-C! processes started

RfcShutdown: Shutdown of RF-C! processes completed

rfc_install.sh: Installation complete.

install.sh: *** Completed RF-C! System Installation for fwxs10 at 17:01:48 Apr 09,1997

install.sh: Remember to reboot the system for the new installation

install.sh: to be applied.

install.sh: Remember to verify correctness of the files: /etc/hosts and

install.sh: /etc/netmasks before rebooting the system.

install.sh: Make sure the RF-C! configuration files are correctly set.

I.Frequently Asked Questions

I.1 - How can I install the same version (release) of the RF-C! on top of the existing one already installed on the system?

I.2 - What happened if I install the same version of the RF-C! on top of another

I.3 - How do I shutdown HA and RF-C!

I.1 - How can I install the same version (release) of the RF-C! on top of the existing one already installed on the system?

Please note, this is the special case, because you only need to re-install the same version of the RF-C! on top of another, when the previous installation had

In order to re-install the same version of the RF-C! over top of another one, you must follow this procedure:

1. Find out whether the RFCapp package is recorded in the system packaging database:
`pkginfo | grep -i rfc`
2. If the RFCapp package exists, then remove it:
`pkgrm RFCapp`
3. Verify the RFCapp packaging entry has been removed from the system packaging database:
`pkginfo | grep -i rfc`
4. Re-install the same version of the RF-C!

I.2 - What happens if I install the same version of the RF-C! on top of another

You will see the following error messages:

...

```
install.sh: *** Installing RF-C! Application package
```

This appears to be an attempt to install the same architecture and version of a package which is already installed. This installation will attempt to overwrite this package.

The installation of this package was previously terminated and installation was never successfully completed.

Installation of was suspended (interaction required).

No changes were made to the system.

```
install.sh: ERROR: RF-C! install failed package check
```

...

I.3 - How do I shutdown HA and RF-C!

To shutdown both HA and RF-C! execute the following script:

```
nohup /home/rfc/current/killHaRfc
```

To shutdown the RF-C! only:

```
ps -ef | grep -i rfc
do kill -9 on the pid of the following processes:
RFC_snmpMA
RFC_main
RFC_swdSA
snmpd
```

To shutdown HA only, execute the following script:

```
/usr/HA/ha_exe/ha_kill HA.x
```

J . Installation of HA on any SUN Workstation :

Sun workstation HA Installation. rev 1.0

Allows HA operation for all RFC!s on any Sun workstation

1. Log in as root.

2. All RFC! control A,B and Takeover IP addresses with aliases,must be added to the /etc/hosts file.

```
ex.      10.5.129.85 rfc
         10.5.129.86 rfca
         10.5.129.87 rfcB
```

3. The HA group 666 must be added to the /etc/group file. The group ID number must be unique.

```
ex.      666::13:
```

4.(Follow Software Package Upgrade Procedure for RFC!)

```
mkdir /tmp/rfc
cd /tmp/rfc
tar -xvf /dev/rmt/0lb
cd /tmp/rfc/Install
pkgadd -d /tmp/rfc/HApkg HA
Answer yes to all questions.
```

5. To run :

```
cd /usr/HA/ha_exe
HA_center takeover ip or alias
ex.  HA_center rfc
     HA_center rfc2
```

each session will open a HA gui for that specific RFC!

8.2.3 Time synchronization across the network

The version 2.2.2 release note comments regarding the installation and use of xntp are still valid. On a redundant system xntp files must be installed on both sides. /tmp/rfc/Install/README.xntp has instructions how to set up xntp software. Following is README.xntp file

8.2.3.1 INSTALLATION OF Xntp :

Installation of the Xntp Time Synchronization Service for Motorola's RF Conductor System

#####

Requirements before you install software:

xntp is the time synchronization system used by the Internet. You will see references to Stratum in documentation and configuration files. A Stratum defines the number of layers one is from a primary time site. A primary time site is defined as Stratum 1. It is usually connected to a radio or satellite receiver or modem.

Since RFC has its own clock source, it does not need to synchronize to outside source (i.e., its internal clock) which has 127.127.1.0 IP address, can be a server to provide time to WMG systems.

More extensive information about xntp can be found at the University of Delaware's Web and FTP sites, udel.edu.

#####

Expand XNTP package after un-tarring from RF-C! load media:

1) Run the following commands as root:

```
cd /tmp/rfc/Install
tar -xvf xntp.tar
```

The following files will be extracted by the tar command:

- /etc/ntp/
- /etc/ntp/ntp.drift
- /etc/ntp/ntp.conf
- /etc/ntp/ntpdate
- /etc/ntp/ntpq
- /etc/ntp/ntptrace
- /etc/ntp/tickadj
- /etc/ntp/xntpd

```

/etc/ntp/xntpd
/etc/ntp/xntp.rc2d.init.script
/etc/ntp/ntp.conf.client
/etc/ntp/ntp.conf.server
/etc/init.d/xntp
/etc/rc2.d/S99xntp link to /etc/init.d/xntp

```

```
#####
```

Server installation:

1). Enter a new hostname and IP address in the /etc/hosts file:

```

# This hostname is required for Xntp - time synchronization across the network
127.127.1.0    timeserv1 tserv1

```

Note : It is important that the above two lines (including the line with the # sign) be included in the /etc/hosts file also for Xntp to run successfully.

2). Copy the server configuration file, /etc/ntp/ntp.conf.server, to the configuration file, /etc/ntp/ntp.conf.

```
cp /etc/ntp/ntp.conf.server /etc/ntp/ntp.conf
```

3). Since RFC has its own clock source, it doesn't want to sync to anyone else, we need to comment out these 2 lines by putting a # in front of the lines.

```

# peer ts-peer1 # xntp time serving peer for time servers.
# broadcast ts-peer1 # xntp time server broadcasts

```

4). At this point, the file /etc/ntp/ntp.conf should have 3 effective lines:

```

server timeserv1 # Stratum ? xntp time server 1
broadcastclient yes
driftfile /etc/ntp/ntp.drift

```

5). Optional, this xntpd will be started automatically every time the startem started. To test the software as root by typing the command:

```
/etc/init.d/xntp start
```

To stop the software :

```
/etc/init.d/xntp stop
```

8.2.3.2 VERIFICATION :

1). Optional, verify the installation by running the query command:

```
/etc/ntp/ntpq
```

Enter the opeers command at the ntpq prompt. Enter help to see other commands.

2). After 10 minutes of xntp installation, run the following commands to check xntp is running fine or not.

```
(sqrfc1:/etc/ntp) # ntpq
ntpq> lpeers
remote      refid      st t when poll reach  delay  offset  disp
=====
*LOCAL(0)   LOCAL(0)   3 l 45 64 377  0.00  0.000  10.01
ntpq> associations
ind assID status  conf reach auth condition  last_event cnt
=====
  1 16740 9614  yes  yes none sys.peer  reachable  1
ntpq> q
(sqrfc1:/etc/ntp) #
```

NOTE : For a *redundant RF-C! Xntp should be installed on both sides* and check whether xntp is running on both sides by executing the above commands.

8.2.4 PRINTER :

To Activate your Printer to start printing do the following :

```
jetadmin
```

```
*****
*           MAIN MENU           *
* HP JetAdmin Utility for UNIX (Rev. D.02.10) *
*****
```

- (1) Configuration (super-user only):
 - configure printer, add printer to spooler
- (2) Diagnostics:
 - diagnose printing problems
- (3) Administration (super-user only):
 - manage HP printer, JetDirect

- (4) Administration (super-user only):
 - manage JetAdmin

- (5) Printer Status:
 - show printer status, location, and contact

?] Help q) Quit

Please enter a selection (q - quit): 1

```
*****
*           CONFIGURATION           *
*   HP JetAdmin Utility for Unix   *
*****
```

Printer Network Interface:

- 1) Create printer configuration in BOOTP/TFTP database
- 2) Remove printer configuration from BOOTP/TFTP

Spooler:

- 3) Add printer to local spooler
- 4) Delete printer from local spooler
- 5) Modify existing spooler queue(s)

?] Help q) Quit

Please enter selection: 3

Enter the network printer name or IP address (q - quit): 199.4.70.70

Following is a list of suggested parameter values for this queue. You may change any settings by selecting the corresponding non-zero numbers. The values will be used to configure this queue when 0 is selected. To abort the operation, press q.

Configurable Parameters:	Current Settings
-----	-----

- | | |
|--|------------------|
| 1) Lp destination (queue) name | [laserjet_1] |
| 2) Status log | [(No log)] |
| 3) Queue class | [(not assigned)] |
| 4) JobMonitor | [ON] |
| 5) Default queue | [NO] |
| 6) Additional printer configuration... | |

Select an item for change, or '0' to configure (q-quit):5

Following is a list of suggested parameter values for this queue. You may change any settings by selecting the corresponding non-zero numbers. The values will be used to configure this queue when 0 is selected. To abort the operation, press q.

Configurable Parameters: Current Settings

- 1) Lp destination (queue) name [laserjet_1]
- 2) Status log [(No log)]
- 3) Queue class [(not assigned)]
- 4) JobMonitor [ON]
- 5) Default queue [YES]
- 6) Additional printer configuration...

Select an item for change, or 0 to configure (q-quit): 0

Ready to configure laserjet_1.
OK to continue? (y/n/q, default=y) y

.....
Finished adding laserjet_1 to the spooler.

Notes for JobMonitor users:

- 1. X Window/Motif(1.2) must be running.
- 2. For users who submit jobs from a diskless client, XStation, or rlogin/telnet from another workstation, the names of X servers must be recorded in /opt/hpnp/etc/hpnpdisplay. JobMonitor will then be displayed on the designated X server.

Press the <return> to continue.

```
*****
*          CONFIGURATION          *
*  HP JetAdmin Utility for Unix  *
*****
```

Printer Network Interface:

- 1) Create printer configuration in BOOTP/TFTP database
- 2) Remove printer configuration from BOOTP/TFTP

Spooler:

- 3) Add printer to local spooler
- 4) Delete printer from local spooler
- 5) Modify existing spooler queue(s)

?] Help q) Quit

Please enter selection: q

```
*****
*          MAIN MENU          *
*  HP JetAdmin Utility for UNIX (Rev. D.02.10) *
*****
```

- 1) Configuration (super-user only):
 - configure printer, add printer to spooler
- 2) Diagnostics:

- diagnose printing problems
 - 3) Administration (super-user only):
 - manage HP printer, JetDirect
 - 4) Administration (super-user only):
 - manage JetAdmin
 - 5) Printer Status:
 - show printer status, location, and contact
- ?] Help q) Quit

Please enter a selection (q - quit): **q**

lpstat -a

laserjet_1 accepting requests since Fri Feb 28 13:27:24 CST 1997

lp /usr/openwin/share/images/PostScript/tiger.ps

request id is laserjet_1-1 (1 file(s))

8.3 NETWORK CONFIGURATION FOR WMG & RF-C!

8.3.1 RF-C! and WMG Network Setups

Our plan behind the networking strategy for the RF-C! and WMG is to setup both boxes where modifications to the original setup can almost all be performed in the /etc/hosts file. The /etc/hosts file is also the place we want to associate the different ip addresses with verbal names.

8.3.2 Modifying the Different Network Ports

A excerpt from a Sun service document on ip addresses is attached to the end of this section to help explain network addresses.

8.3.3 WMG

Note: The WMG comes with predefined network ports that have associated names that are used in the application software, therefore please don't change the setup of the ports unless you completely understand the contingencies

The only two ports you can setup on the WMG our qe1 and qe2. qe1 is used for the WMtp connection and qe2 is used for the peripheral connections. Before changing the network configuration please make a backup copy of the /etc/hosts file as well as copy down the information that is presented when you execute the "ifconfig -a". The "ifconfig -a" command will show all the current settings per each port on the WMG's CP.

```
# ifconfig -a
lo0: flags=849<UP,LOOPBACK,RUNNING,MULTICAST> mtu 8232
    inet 127.0.0.1 netmask ff000000
le0: flags=863<UP,BROADCAST,NOTRAILERS,RUNNING,MULTICAST> mtu 1500
    inet 177.10.16.28 netmask fffff00 broadcast 177.10.16.255
    ether 8:0:20:10:78:d
```

The will allow you to go back to the initial setup if there is a problem.

The qe1 and qe2 ports are first setup in the hostname.qe1 and hostname.qe2 files in the /etc directory. By viewing these files using the "more (filename)" command you will see one hostname per file given to these ports. These files could contain the respective ip addresses per port but our defined policy is to use these perscribed names in the /etc/hosts file to associate an ip address. Therefore write down the names associated with these ports. Then using the more command veiw the /etc/hosts file, you will see the names of these two ports proceeded by a network ip address. If you want to change the ip address of either one of these two ports use a text editor like "vi" to change the ip associated with the ports name. Don't modify the port's name because it cannot be identified with the name in the hostname.qe1 or qe2 files.

If you change the ip address to these ports you work is only 3/4 complete. You must now make sure the netmask for your new address is properly defined. If the new ip you have given either one of these ports is on the same network as the previous port then you will not have to make any changes to the netmask. But if it is different you must modify the /etc/netmask file in the following format:

```
network-address    netmask
```

For example:

```
# more /etc/netmasks
177.10.0.0 255.255.255.0
```

The above would subnet the class B network, 177.10.0.0, into 254 subnets, from 177.11.1.0 to 177.10.254.0. It is important to note that the entry in the left hand column must be the original base network number (ie #.0.0.0 for a Class A, #.#.0.0 for a Class B and #.#.#.0 for a Class C), not the subnet.

Once all your port changes have been made, and you have completed all your network changes we suggest resetting the WMG's CP by following the proper shutdown / reset procedures.

8.3.4 RF-C!

Note: The RF-C! comes with predefined network ports that have associated names that are used in the application software, therefore please don't change the setup of the ports unless you completely understand the contingencies

You can change the ip addresses for any of the three ports on the RF-C! (Wmtp, Edge, or pheripheral) but make sure the boxes used with the RF-C! also have there ip addresses changed to correspond with your changes. An example of this would be the ip address of the hub / terminal server. Before changing the network configuration please make a backup copy of the /etc/hosts file as well as copy down the information that is presented when you execute the "ifconfig -a". The "ifconfig -a" command will show all the current settings per each port on the RF-C!.

```
# ifconfig -a
lo0: flags=849<UP,LOOPBACK,RUNNING,MULTICAST> mtu 8232
    inet 127.0.0.1 netmask ff000000
le0: flags=863<UP,BROADCAST,NOTRAILERS,RUNNING,MULTICAST> mtu 1500
```

```
inet 177.10.16.28 netmask ffffff00 broadcast 177.10.16.255
ether 8:0:20:10:78:d
```

The will allow you to go back to the initial setup if there is a problem.

The le0, qe0 and qe1 ports our first setup in the hostname.le0, hostname.qe0 and hostname.qe1 files in the /etc directory. By viewing these files using the "more (filename)" command you will see one hostname per file given to these ports. These files could contain the respective ip addresses per port but our defined policy is to use these perscribed names in the /etc/hosts file to associate an ip address. Therefore write down the names associated with these ports. Then using the " more"command veiw the /etc/hosts file, you will see the names of these ports proceeded by a network ip address. If you want to change the ip address of either of these ports use a text editor like "vi" to change the ip associated with the ports name. Don't modify the port's name because it cannot be identified with the name in the hostname.le0, qe0 or qe1 files.

If you change the ip address to these ports you work is only 3/4 complete. You must now make sure the netmask for your new address is properly defined. If the new ip you have given either one of these ports is on the same network as the previous port then you will not have to make any changes to the netmask. But if it is different you must modify the /etc/netmask file in the following format:

```
network-address netmask
```

For example:

```
# more /etc/netmasks
177.10.0.0 255.255.255.0
```

The above would subnet the class B network, 177.10.0.0, into 254 subnets, from 177.11.1.0 to 177.10.254.0. It is important to note that the entry in the left hand column must be the original base network number (ie #.0.0.0 for a Class A, #.#.0.0 for a Class B and #.#.#.0 for a Class C), not the subnet.

Once all your port changes have been made, and you have completed all your network changes we suggest resetting the RF-C! by following the proper shutdown / reset procedures

8.3.5 Appendix A INFODOC ID: 11992 SunService Tip Sheet for Sun Routing

8.3.6 IP addresses, Netmasks and Subnets

All IP ADDRESSES are divided into two portions: the NETWORK ADDRESS, and the HOST ADDRESS. The network portion of the IP address defines the level at which routing is done this means that all machines with the same network address are on the same network. For example, if we had the IP address a.b.c.d, we might learn that the network portion of that address was a.b, and the host portion of that address was c.d. In that case, all machines with the IP address a.b.*.* would be on the same network. We would typically see a route to the network a.b.0.0.

By default, Internet IP addresses are divided into 3 Classes. Each of these ranges has a different portion of the IP address reserved as the network and host addresses.

Class	IP Range	Network	Host
-------	----------	---------	------

-----	-----	-----	----
Class A	1.*.* to 127.*.*	a	b.c.d
Class B	128.*.* to 191.*.*	a.b	c.d
Class C	192.*.* to 223.*.*	a.b.c	d

Given the standard classes, a few typical network routes would be:

```
16.0.0.0
177.10.0.0
207.48.123.0
```

NETMASKS are a shorthand way to define what portion of an IP address is reserved for the network address. The netmask is a set of 1 and 0 bits bits set to 1 define the network portion of an IP address, while bits set to 0 define the host portion of an IP address. We can look at the example of a Class B network address. In the address a.b.c.d, the network portion is a.b and the host portion is c.d. This is equivalent to the netmask 255.255.0.0:

```
255.255.0.0 = 11111111.11111111.00000000.00000000
```

This means that the three classes of networks have the following three default netmasks:

Class	IP Range	Netmask	Nodes/Network
-----	-----	-----	-----
Class A	1.*.* to 127.*.*	255.0.0.0	16,777,215
Class B	128.*.* to 191.*.*	255.255.0.0	65,535
Class C	192.*.* to 223.*.*	255.255.255.0	255

Thus, packets sent to 100.1.2.3 are routed at the level 100.0.0.0 (and all 16 million machines in the 100.*.* range should form one distinct network), while packets sent to 200.1.2.3 are routed at the level 200.1.2.0 (and all 255 machines in the 200.1.2.* range should form one distinct network). Often, the default netmasks are not sufficient. You can further divide a network by defining a custom netmask. This is termed SUBNETTING. A custom netmask changes the definition of the network size, and also changes the level at which routing is done. For example, many people on Class A or B networks implement a netmask of 255.255.255.0, so that all routing is done to networks of 255 or less machines.

A few examples of custom netmasks:

IP Address	Netmask	Network Address
-----	-----	-----
16.1.2.3	255.255.0.0	16.1.0.0
32.7.3.7	255.255.255.0	32.7.3.0
177.10.16.28	255.255.255.0	177.10.16.0

This netmasking is really done down at the bit level. These means that you can divide a network even further. An example of this is given down in Section 3.10.

[Note: references to the network 177.10.*.* in this document should be understood to be wholly fictitious, and are only used for reasons of example.]

8.3.7 How to Subnet by Bit

As was noted in Section 1.3, subnetting is actually done at the bit level. That is, all the bits that form the IP address are masked by the bits that form the Netmask, in order to generate the Network Address. Here's some examples of what a netmask looks like down at the bit level:

```
255.255.255.0 = 11111111.11111111.11111111.00000000
255.255.255.192 = 11111111.11111111.11111111.11000000
```

And here are a few examples of using the '192' netmask:

IP Address	Netmask	Network Address
-----	-----	-----
177.10.16.90	255.255.255.192	177.10.16.64
177.10.16.150	255.255.255.192	177.10.16.128

Expanding out the first example should make it a bit more clear:

```
177.10.16.90 = 10010110.01100101.00010000.01011010
255.255.255.192 = 11111111.11111111.11111111.11000000
Network Address = 10010110.01100101.00010000.01000000 = 177.10.16.64
```

The only caveat is that RFC 917 states that it is illegal to have a subnet address that is all 0s or all 1s. This means that when you split your class C, you will lose the bottom set of IP addresses, and also the top set of IP addresses.

Putting this all together, we can take a look at two examples. These examples both assume a Class C network (that is a network between 192.*.* and 223.*.*), which you wish to subnet.

```
IP ADDRESS = any Class C
NETMASK = 255.255.255.128 = 11111111.11111111.11111111.10000000
```

```
Subnet 1 = '0'; Illegal because subnet is all 0s
Subnet 2 = '1'; Illegal because subnet is all 1s
```

Clearly, using the 255.255.255.128 mask to subnet a Class C is useless.

```
IP ADDRESS = any Class C
NETMASK = 255.255.255.192 = 11111111.11111111.11111111.11000000
```

```
Subnet 1 = '00'; Illegal because subnet is all 0s
addresses x.x.x.0 to x.x.x.63 are wasted
```

```
Subnet 2 = '01'; network x.x.x.64, broadcast x.x.x.127
machines range from x.x.x.65 to x.x.x.126
```

```
Subnet 3 = '10'; network x.x.x.128, broadcast x.x.x.191
```

machines range from x.x.x.129 to x.x.x.190

Subnet 4 = '11'; Illegal because subnet is all 1s
addresses x.x.x.192 to x.x.x.255 are wasted

Thus, if you had a Class C that you wanted to divide into two subnets, you would use the 192 netmask described above, and end up with two ranges of 63 machines each.

Now, the above all assumes that you own a Class C network, that is a network with an network address between 192.*.* and 223.*.*.

Another common situation is the case where you are on a Class B network (ie 177.10.0.0), but you actually control a network equivalent in size to a Class C (ie 177.10.16.0), and you want to subnet further. Things work about the same as above, but you do not have to waste the top and bottom IP ranges. This is because the entire subnet, which is nine or more bits long, is not set to all 0s or all 1s in those cases only the last two digits are. So, if we were subnetting 177.10.16.0 further, using the 192 subnet, our table would look like this:

IP ADDRESS = 177.10.16.0
(though any class B, further subnetted will work the same)

NETMASK = 255.255.255.192 = 11111111.11111111.11111111.11000000

Subnet 1 = '00010000.00'; network 177.10.16.0, broadcast 177.10.16.63
machines range from 177.10.16.1 to 177.10.16.62

Subnet 2 = '00010000.01'; network 177.10.16.64, broadcast 177.10.16.127
machines range from 177.10.16.65 to 177.10.16.126

Subnet 3 = '00010000.10'; network 177.10.16.128, broadcast 177.10.16.191
machines range from 177.10.16.129 to 177.10.16.190

Subnet 4 = '00010000.11'; network 177.10.16.192, broadcast 177.10.16.255
machines range from 177.10.16.193 to 177.10.16.254

8.3.8 Defining a Default Router

To define a default router, so that you can send all of your non-local packets through one standard machine, simply create the file /etc/defaultrouter. Please define a default router for the WMG and RF-C It should have as its sole contents, the name of your router:

```
# more /etc/defaultrouter  
router-1
```

Note that any machine listed as a defaultrouter **must be** on the same subnet as your machine.

You also need to make sure that the name which appears in /etc/defaultrouter has an entry in your /etc/hosts file:

```
# more /etc/hosts
...
177.10.16.1 router-1
```

After you have created `/etc/defaultrouter`, and made sure that any names listed in that file are also listed in `/etc/hosts`, you can reboot your machine. When it comes back up, it will automatically be routing through the `defaultrouter` that you have defined.

After you have completed all your network changes we suggest resetting the WMG's CP or RF-C! by following the proper shutdown / reset procedures

8.3.9 Static Routes

The first thing we want to do if there are any routers on the nets. of the WMG or RF-C! is add them to the `/etc/hosts` file. Therefore a name is associated with each router's ip address.

Static routes are usually only used in conjunction with a `/etc/defaultrouter`. You might do so if you had a couple of networks which you did not want to go through your `defaultrouter`. In that case, you will probably want to make the routes permanent, by adding the route commands to the `/etc/rc2.d/S72inetsvc` file. At any time, you can add static routes to your machine via the `route` command. The standard syntax for adding a network route is:

```
route add net remote-network-ip "router's-name" hop-count
```

`remote-network-ip` is the network you are adding a route to. `"router's-name"` is the name you associated to the ip address in the `/etc/hosts` file of the router that leads to that remote-network. `hop-count` is an integer which identifies the number of gateways that you must go through to get to the remote-network. A network that is directly connected to your machine would have a hop count of 0 (ie, the 177.10.16.0 net in the example below). A remote-network that is directly connected to a gateway-machine that is, in turn, on the same network as your machine would have a hop count of 1 (ie, the 177.10.17.0 net in the example below).

For example, on the following network:

```
YOUR-MACHINE---(177.10.16.0 NET)
NET YOU WANT TO ROUTE TOO---(177.10.17.0 NET)
THROUGH router-1---(177.10.16.1)
```

You could execute the following command from your machine, in order to create a static route to the 177.10.17.0 net:

```
route add net 177.10.17.0 "router-1" 1
```

(`router-1` has an entry in the `/etc/hosts` file with an association 177.10.16.1)

You then want to make the routes permanent in case you reset the WMG's CP or RF-C!, by adding the route commands to the `/etc/rc2.d/S72inetsvc` file by using an editor like `"vi"`. After you have completed all your network changes we suggest resetting the WMG's CP or RF-C! by following the proper shutdown / reset procedures

8.3.10 Turning Off Router Functions in the WMG / RF-C!

Making sure the routing function associated with the Solaris operating system are turned off or not operational is very important. If the routing functions are turned on they can hamper the performance of the WMG and RF-C!.

8.3.11 IP Forwarding

IP forwarding can couple with other network factors in the WMG or RF-C! to cause the WMG or RF-C! to route between network ports, which can cause network problems. To turn off ip forwarding run the following comand as well as place it in the /etc/rc2.d/S72inetsvc file by using a text editor like "vi".

```
ndd -set /dev/ip ip_forwarding 0
```

It may be useful to note, that on Solaris machines, ip_forwarding can have three values:

- 0 Never Forward
- 1 Always Forward
- 2 Only forward when two or more interfaces are up

The above steps result in the ndd /dev/ip ip_forwarding variable being changed from "1" to "0", which prevents routing.

8.3.12 Turn Off in.rdisc

Turn off in.rdisc which is a routing protocol that may come on if you don't have a defaultrouter defined. To turn it off run the following command:

```
# mv /usr/sbin/in.rdisc /usr/sbin/rdisc.save
```

After you have completed all your network changes we suggest resetting the WMG's CP or RF-C! by following the proper shutdown / reset procedures

8.3.13 Turn off the "RIP" functionality on each interface

The RIP protocol will only come on through "in.routed" if there isn't a define defaultrouter. In case there isn't a define defaultrouter to keep RIP from turning on add norip lines to the /etc/gateways file for all interfaces. For example to create a /etc/gateway if there isn't one define run the following command in the /etc directory:

```
# touch gateways
```

Then edit it using a editor like "vi" to add the following commands:

```
norip le0  
norip qe0  
norip qe1  
norip qe2  
norip qe3
```

After you have completed all your network changes we suggest resetting the WMG's CP or RF-C! by following the proper shutdown / reset procedures

8.4 CHOREOGRAPHER!

8.4.1 Solaris Installation Procedures

Place the Solaris 2.5.1 CD-ROM in the CD-ROM drive. On the Sun keyboard, press <Stop> a to get to the ok prompt. Type the following on the command line:

```
ok> boot cdrom
```

When the system comes up perform the following steps. Note that the system prompts are shown. Type the values indicated:

1. Select 'Continue' (Left mouse click on Continue)
2. Host Name: **rfchor2** (This may be different for your site. Please confirm before entering.)
3. Networked: **Yes**
4. IP-Address: **177.12.77.12** (This may be different for your site. Please confirm before entering.)
5. Select 'Continue'
6. Name Services: **None**
7. Select 'Continue'
8. System part of a subnet: **Yes**
9. Netmask: **255.255.255.0** (This may be different for your site. Please confirm before entering.)
10. Select 'Geographic Region'
11. Press 'Set...' to enter appropriate time zone parameters.
12. Date and time: accept default or set correct time and date
13. Select 'Continue'
14. Select 'Initial'
15. Select 'Standalone'
16. Select 'Entire Distribution plus OEM support'
17. Select the available disk and select 'Add'
18. Select 'Continue'
19. Select 'Manual Layout'

20. Left mouse click on Customize

21. Enter the following disk partition sizes:

Number	Name	Size
0	/	1200
1	swap	445
2	overlap	2028
3		
4		
5		
6	/home	254
7	/usr/local	128

22. Select 'Ok'

23. Select 'Continue'

24. Select 'Continue'

25. Select 'Begin Installation'

26. Select 'Reboot' (Solaris takes several minutes to install - over an hour on a SPARC 20)

27. Set the root password.

28. Login as root using the password from the previous step.

29. Add the default router address by typing in the following:

```
# route add default 199.4.71.1 1
```

(The 199.4.71.1 value may be different for your site. Please confirm before entering.)

30. Edit the file /etc/defaultrouter and insert the above router IP address into it.

8.4.2 Choreographer! Installation Script Installation

Note*** This step assumes Solaris has already been loaded.

Following are the step-by-step instructions required to install the Choreographer! and the related software.

Insert the Choreographer CD into the CD-ROM drive.

Type the following commands:

(**** **WARNING!!!** There is a **SPACE** on both sides of the "." in the /usr/sbin/pkgadd argument list)

```
# cd /cdrom/cdrom0
```

```
# /usr/sbin/pkgadd -d . CHOcinst
```

Answer **y** to the following prompts:

The following files are already installed on the system and are being used by another package:

```
/etc/system  
/usr/share/lib/zoneinfo/PRC  
Do you want to install those conflicting files [y,n,?,q] y  
Do you want to continue with the installation of <CHOcinst> [y,n,?] y
```

Reboot the system:

```
# shutdown -i6 -g0 -y
```

After the system has rebooted type in the following to start OpenWin:

```
# /usr/openwin/bin/openwin
```

Open a cmdtool to run the C! installation script by typing in the following commands:

```
# > cd /opt/C_Install
```

```
# > ./C_Install
```

Proceed to the Informix Installation

8.4.3 Informix Installation

M E N U S E L E C T I O N

System / Application Software

- a) Install All (Estimate time 1 hours)
- b) Install/Update Informix (Estimate time 5 minutes)
- c) Install/Update HP OpenView (Estimate time 20 minutes)
- d) Install/Update Choreographer! (Estimate time 5 minutes)

Peripherals, Utilities & Other

- e) Install/Update Printer (Estimate time 5 minutes)
- f) Install/Update EVMIB (Estimate time 5 minutes)
- g) Site Setup (Estimate time 2 minutes)
- h) Backup/Restore (Estimate time 20 minutes)
- i) Refresh HPOV iFOR/LS license (Estimate time 2 minutes)

Q. EXIT

Select one option: **b**

- 1) new-install
- 2) re-install

Select a number for new-install or re-install: **1**

Select 1) for new-install

The script will display a warning message indicating that the contents of the EVMIB database will be destroyed from this procedure! If you want to preserve the EVMIB database perform a BACKUP before proceeding with the Infromix installation. Press <Enter> to resume the Informix installation.

If a version of Informix already exists, the installation script will display the following prompt:

Do you want a backup copy of your existing /usr/informix? (y/[n])

Warning!!! You must now enter the Informix serial number and activation key. Make sure this information is corect. If you mistype this information, the Informix installation will **FAIL!!!**

Enter your Informix serial number (i.e. INF#999999) or 'Q' to quit.
Enter your serial number (example: AAB#J380869)
Enter Informix activation key (uppercase letters only!) or 'Q' to quit.

The script will load the informix files onto the Choreographer! and complete the Informix installation.

Proceed to HP Open View Installation

8.4.4 HP Open View Installation
M E N U S E L E C T I O N

System / Application Software

- a) Install All (Estimate time 1 hours)
- b) Install/Update Informix (Estimate time 5 minutes)
- c) Install/Update HP OpenView (Estimate time 20 minutes)
- d) Install/Update Choreographer! (Estimate time 5 minutes)

Peripherals, Utilities & Other

- e) Install/Update Printer (Estimate time 5 minutes)
- f) Install/Update EVMIB (Estimate time 5 minutes)
- g) Site Setup (Estimate time 2 minutes)
- h) Backup/Restore (Estimate time 20 minutes)
- i) Refresh HPOV iFOR/LS license (Estimate time 2 minutes)

Q. EXIT

Select one option: **c**

Insert the HP OpenView CDROM and press <Enter>.

The installation script will install HP OpenView from the CDROM.

Warning!!!! HP OpenView was installed with a temporary license that is valid for 60 days from the date of installation. It is your responsibility to obtain a valid end-user license agreement from Hewlett Paard. The software ships with a form that the customer must fill out and return to Hewlett Packard in order to receive a permanent license. This process is fully described in the HP OpenView documentation, Chapter 9 of the Network Node Manager manual.
*

Press 'ENTER' to continue.
Installation of HP OpenView Node Manager Software is complete.

Proceed to Choreographer! Install

8.4.5 Choreographer! Installation
M E N U S E L E C T I O N

System / Application Software

- a) Install All (Estimate time 1 hours)
- b) Install/Update Informix (Estimate time 5 minutes)
- c) Install/Update HP OpenView (Estimate time 20 minutes)
- d) Install/Update Choreographer! (Estimate time 5 minutes)

Peripherals, Utilities & Other

- e) Install/Update Printer (Estimate time 5 minutes)
- f) Install/Update EVMIB (Estimate time 5 minutes)
- g) Site Setup (Estimate time 2 minutes)
- h) Backup/Restore (Estimate time 20 minutes)
- i) Refresh HPOV iFOR/LS license (Estimate time 2 minutes)

Q. EXIT

Select one option **d**

- 1) new-install
- 2) re-install

Select a number for new-install or re-install: **1**

Select 1) for new-install

The script will display a warning message indicating that the contents of the EVMIB database will be destroyed by installing Choreographer!. If you want to preserve the EVMIB database, perform a BACKUP (Option g) before proceeding with the installation. Press <Enter> to resume the Choreographer! installation.

If Choreographer! software already exists, the installation script will display the prompt:

Do you want a backup copy of your existing /usr/choreographer? (y/[n])

The install script will proceed with the installation of all Choreographer! software packages. You will be prompted for passwords for the three viewer user accounts and three admin accounts.

Installation of the Choreographer! Software is complete.

Select **Q** to exist the install script after the Choreographer! installation. At this point, the install script will reboot the Choreographer!. Let the system reboot and proceed to the next section, EVMIB installation.

8.4.6 EVMIB Installation

```
# cd /opt/C_Install
```

```
# ./C_Install
```

```
M E N U   S E L E C T I O N
```

```
*****
```

```
System / Application Software
```

```
-----
```

- a) Install All (Estimate time 1 hours)
- b) Install/Update Informix (Estimate time 5 minutes)
- c) Install/Update HP OpenView (Estimate time 20 minutes)
- d) Install/Update Choreographer! (Estimate time 5 minutes)

```
Peripherals, Utilities & Other
```

```
-----
```

- e) Install/Update Printer (Estimate time 5 minutes)
- f) Install/Update EVMIB (Estimate time 5 minutes)
- g) Site Setup (Estimate time 2 minutes)
- h) Backup/Restore (Estimate time 20 minutes)
- i) Refresh HPOV iFOR/LS license (Estimate time 2 minutes)

```
Q. EXIT
```

```
Select one option: f
```

See EVMIB Release Notes for EVMIB Installation instructions. After completing the EVMIB installation proceed to the next section for Site Setup.

8.4.7 Site Setup

M E N U S E L E C T I O N

System / Application Software

- a) Install All (Estimate time 1 hours)
- b) Install/Update Informix (Estimate time 5 minutes)
- c) Install/Update HP OpenView (Estimate time 20 minutes)
- d) Install/Update Choreographer! (Estimate time 5 minutes)

Peripherals, Utilities & Other

- e) Install/Update Printer (Estimate time 5 minutes)
- f) Install/Update EVMIB (Estimate time 5 minutes)
- g) Site Setup (Estimate time 2 minutes)
- h) Backup/Restore (Estimate time 20 minutes)
- i) Refresh HPOV iFOR/LS license (Estimate time 2 minutes)

Q. EXIT

Select one option: **g**

Follow screen instructions to configure teh RF-C host IPs in the host, .rhost, and netrc files.
Proceed to the next section, Printer Installation

8.4.8 Printer Installation

M E N U S E L E C T I O N

M E N U S E L E C T I O N

System / Application Software

- a) Install All (Estimate time 1 hours)
- b) Install/Update Informix (Estimate time 5 minutes)
- c) Install/Update HP OpenView (Estimate time 20 minutes)
- d) Install/Update Choreographer! (Estimate time 5 minutes)

Peripherals, Utilities & Other

- e) Install/Update Printer (Estimate time 5 minutes)
- f) Install/Update EVMIB (Estimate time 5 minutes)
- g) Site Setup (Estimate time 2 minutes)
- h) Backup/Restore (Estimate time 20 minutes)
- i) Refresh HPOV iFOR/LS license (Estimate time 2 minutes)

Q. EXIT

Select one option **e**

Installing HP Printer package

The following packages are available:

- 1 HPNP JetAdmin for Unix
(sparc) D.02.10

Select package(s) you wish to process (or 'all' to process

all packages). (default: all) [?,??,q]:

Processing package instance from

JetAdmin for Unix

(sparc) D.02.10

This appears to be an attempt to install the same architecture and version of a package which is already installed. This installation will attempt to overwrite this package.

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Hewlett-Packard Company

3000 Hanover Street

Palo Alto, CA 94304 U.S.A.

Where should HPNP be installed?

(for /opt/hpnp) [?,q]

HPNP will be installed in /opt/hpnp.

Please configure the sub-packages you would like to install.

-
- 0. Done altering installation configuration
 - 1. [On] JetPrint
 - 2. [On] JobMonitor
 - 3. [On] HPNPF
 - 4. [On] HPNPD
 - 5. [On] CONVERT
 - ?. Help
-

Select a number to toggle an installation option.

When done select 0. Select ? for help information: **0**

Using as the package base directory.

Processing package information.

Processing system information.

232 package pathnames are already properly installed.

Verifying disk space requirements.

Checking for conflicts with packages already installed.

Checking for setuid/setgid programs. This package contains scripts which will be executed with super-user permission during the process of installing this package.

Do you want to continue with the installation of [y,n,?] **y**

Installing JetAdmin for Unix as

Executing preinstall script.

Installing part 1 of 1. [verifying class]

/opt/hpnp/newconfig/hpnpdisplay

/opt/hpnp/newconfig/hpnpdtab

[verifying class]

/opt/hpnp/newconfig/hpnp SNMP

[verifying class]

/opt/hpnp/bin/jetprint

/opt/hpnp/bin/jetprint_24

/opt/hpnp/newconfig/JetPrint

[verifying class]

/opt/hpnp/bin/xjdm

/opt/hpnp/bin/xjdm_24

/opt/hpnp/bin/xjmore

/opt/hpnp/bin/xjmore_24

/opt/hpnp/newconfig/xjdm.mib

```
[ verifying class ]  
/opt/hpnp/bin/xjrm  
/opt/hpnp/bin/xjrm_24  
[ verifying class ]  
/opt/hpnp/newconfig/RFPprogram  
[ verifying class ]  
/opt/hpnp/newconfig/hplogo.pcl  
/opt/hpnp/sh/dumbplot  
/opt/hpnp/sh/net_dsnj.sol  
/opt/hpnp/sh/net_lj3plus.sol  
/opt/hpnp/sh/net_lj3x.sol  
/opt/hpnp/sh/net_lj4x  
/opt/hpnp/sh/net_lj5x  
/opt/hpnp/sh/postscript.sol  
/opt/hpnp/sh/topcl  
/opt/hpnp/sh/tops  
[ verifying class ]  
[ verifying class ]  
## Executing postinstall script.
```

The file /usr/sbin/bootpd already exists.

HPNP version of bootpd not installed.

The file /usr/sbin/bootpquery already exists.

HPNP version of bootpquery not installed

Signalled inetd to re-read /etc/inetd.conf.

Updating Software Database.

Starting hpnpd.

NOTE: You may wish to add /opt/hpnp/man to MANPATH in /etc/profile, etc.

NOTE: You may wish to add /opt/hpnp/bin to PATH in /etc/profile, etc.

NOTE: You may wish to add /opt/hpnp/lib to LD_LIBRARY_PATH in /etc/profile, etc.

NOTE: You may wish to check that the X11 and Motif 1.2 shared library paths are configured in LD_LIBRARY_PATH by /etc/profile, etc.

Converting model scripts in /etc/lp/interfaces from /usr/lib/hpnp to /opt/hpnp. Old model scripts will be saved in /tmp.

Installation of was successful.

Please enter the printers IP address or 'Q' to quit.

NOTE: Refer to 12M document for Historical statistics and Neca configuration

8.5 RF-BATON!

For new installation please refer to the manuals and the 12M document.

8.6 NUCLEUS!

For new installation please refer to the manuals and the 12M document.

9 APPENDICES

9.1 Recommended System Upgrade Procedure

There are software incompatibilities that may present themselves during the upgrade of one's system if time and consideration of these factors are not adhered to.

The upgrade of the WMG to Ver-3.3.0.1 should be first

The upgrade of the Baton! to Ver-1.2.0 may be accomplished via fips to the dormant flash bank; however, one does not want to switch banks over until the RFC! has been upgraded.

If one desires to use the Choreographer! for software download and snmp alarm reporting, then it should be upgraded to Ver-1.3.1, EvMib3.1, WMG MibVer-1,RFC! MibVer-3, and B! MibVer-7.

If the Choreographer! has been upgraded, then the Neca application may be used for Nucleus software upgrade to Ver-4.030 in the dormant flash bank.

The RFC! may now be upgraded to Ver-3.6.0

Upon completion of all of the upgrades, it is now necessary to change flash banks on the B! Ver-1.2.0 and Nucleus Ver-4.030 for paging operations to resume.

9.2 IP Addresses, Netmasks and Subnets

All IP ADDRESSES are divided into two portions: the NETWORK ADDRESS, and the HOST ADDRESS. The network portion of the IP address defines the level at which routing is done this means that all machines with the same network address are on the same network. For example, if we had the IP address a.b.c.d, we might learn that the network portion of that address was a.b, and the host portion of that address was c.d. In that case, all machines with the IP address a.b.*.* would be on the same network. We would typically see a route to the network a.b.0.0.

By default, Internet IP addresses are divided into 3 Classes. Each of these ranges has a different portion of the IP address reserved as the network and host addresses.

Class	IP Range	Network	Host
Class A	1.*.* to 127.*.*	a	b.c.d
Class B	128.*.* to 191.*.*	a.b	c.d
Class C	192.*.* to 223.*.*	a.b.c	d

Given the standard classes, a few typical network routes would be:

```
16.0.0.0
177.10.0.0
207.48.123.0
```

NETMASKS are a shorthand way to define what portion of an IP address is reserved for the network address. The netmask is a set of 1 and 0 bits set to 1 define the network portion of an IP address, while bits set to 0 define the host portion of an IP address. We can look at the example of a Class B network address. In the address a.b.c.d, the network portion is a.b and the host portion is c.d. This is equivalent to the netmask 255.255.0.0:

255.255.0.0 = 11111111.11111111.00000000.00000000

This means that the three classes of networks have the following three default netmasks:

Class	IP Range	Netmask	Nodes/Network
Class A	1.*.* to 127.*.*	255.0.0.0	16,777,215
Class B	128.*.* to 191.*.*	255.255.0.0	65,535
Class C	192.*.* to 223.*.*	255.255.255.0	255

Thus, packets sent to 100.1.2.3 are routed at the level 100.0.0.0 (and all 16 million machines in the 100.*.* range should form one distinct network), while packets sent to 200.1.2.3 are routed at the level 200.1.2.0 (and all 255 machines in the 200.1.2.* range should form one distinct network). Often, the default netmasks are not sufficient. You can further divide a network by defining a custom netmask. This is termed SUBNETTING. A custom netmask changes the definition of the network size, and also changes the level at which routing is done. For example, many people on Class A or B networks implement a netmask of 255.255.255.0, so that all routing is done to networks of 255 or less machines.

A few examples of custom netmasks:

IP Address	Netmask	Network Address
16.1.2.3	255.255.0.0	16.1.0.0
32.7.3.7	255.255.255.0	32.7.3.0
177.10.16.28	255.255.255.0	177.10.16.0

This netmasking is really done down at the bit level. These means that you can divide a network even further. An example of this is given down in Section 3.10.

[Note: references to the network 177.10.*.* in this document should be understood to be wholly fictitious, and are only used for reasons of example.]

9.2.1 How to Subnet by Bit

As was noted in Section 1.3, subnetting is actually done at the bit level. That is, all the bits that form the IP address are masked by the bits that form the Netmask, in order to generate the Network Address. Here's some examples of what a netmask looks like down at the bit level:

255.255.255.0 = 11111111.11111111.11111111.00000000

255.255.255.192 = 11111111.11111111.11111111.11000000

And here are a few examples of using the '192' netmask:

IP Address	Netmask	Network Address
-----	-----	-----
177.10.16.90	255.255.255.192	177.10.16.64
177.10.16.150	255.255.255.192	177.10.16.128

Expanding out the first example should make it a bit more clear:

177.10.16.90 = 10010110.01100101.00010000.01011010
 255.255.255.192 = 11111111.11111111.11111111.11000000
 Network Address = 10010110.01100101.00010000.01000000 = 177.10.16.64

The only caveat is that RFC 917 states that it is illegal to have a subnet address that is all 0s or all 1s. This means that when you split your class C, you will lose the bottom set of IP addresses, and also the top set of IP addresses.

Putting this all together, we can take a look at two examples. These examples both assume a Class C network (that is a network between 192.*.* and 223.*.*), which you wish to subnet.

IP ADDRESS = any Class C
 NETMASK = 255.255.255.128 = 11111111.11111111.11111111.10000000

Subnet 1 = '0'; Illegal because subnet is all 0s
 Subnet 2 = '1'; Illegal because subnet is all 1s

Clearly, using the 255.255.255.128 mask to subnet a Class C is useless.

IP ADDRESS = any Class C
 NETMASK = 255.255.255.192 = 11111111.11111111.11111111.11000000

Subnet 1 = '00'; Illegal because subnet is all 0s
 addresses x.x.x.0 to x.x.x.63 are wasted

Subnet 2 = '01'; network x.x.x.64, broadcast x.x.x.127
 machines range from x.x.x.65 to x.x.x.126

Subnet 3 = '10'; network x.x.x.128, broadcast x.x.x.191
 machines range from x.x.x.129 to x.x.x.190

Subnet 4 = '11'; Illegal because subnet is all 1s
 addresses x.x.x.192 to x.x.x.255 are wasted

Thus, if you had a Class C that you wanted to divide into two subnets, you would use the 192 netmask described above, and end up with two ranges of 63 machines each.

Now, the above all assumes that you own a Class C network, that is a network with an network address

between 192.*.* and 223.*.*.

Another common situation is the case where you are on a Class B network (i.e. 177.10.0.0), but you actually control a network equivalent in size to a Class C (i.e. 177.10.16.0), and you want to subnet further. Things work about the same as above, but you do not have to waste the top and bottom IP ranges. This is because the entire subnet, which is nine or more bits long, is not set to all 0s or all 1s in those cases only the last two digits are. So, if we were subnetting 177.10.16.0 further, using the 192 subnet, our table would look like this:

IP ADDRESS = 177.10.16.0
(though any class B, further subnetted will work the same)

NETMASK = 255.255.255.192 = 11111111.11111111.11111111.11000000

Subnet 1 = '00010000.00'; network 177.10.16.0, broadcast 177.10.16.63
machines range from 177.10.16.1 to 177.10.16.62

Subnet 2 = '00010000.01'; network 177.10.16.64, broadcast 177.10.16.127
machines range from 177.10.16.65 to 177.10.16.126

Subnet 3 = '00010000.10'; network 177.10.16.128, broadcast 177.10.16.191
machines range from 177.10.16.129 to 177.10.16.190

Subnet 4 = '00010000.11'; network 177.10.16.192, broadcast 177.10.16.255
machines range from 177.10.16.193 to 177.10.16.254

9.2.2 Defining a Default Router

To define a default router, so that you can send all of your non-local packets through one standard machine, simply create the file /etc/defaultrouter. Please define a default router for the WMG and RF-C It should have as its sole contents, the name of your router:

```
# more /etc/defaultrouter
router-1
```

Note that any machine listed as a defaultrouter **must be** on the same subnet as your machine.

You also need to make sure that the name which appears in /etc/defaultrouter has an entry in your /etc/hosts file:

```
# more /etc/hosts
...
177.10.16.1 router-1
```

After you have created /etc/defaultrouter, and made sure that any names listed in that file are also listed in /etc/hosts, you can reboot your machine. When it comes back up, it will automatically be routing through the defaultrouter that you have defined.

After you have completed all your network changes we suggest resetting the WMG's CP or RF-C! by following the proper shutdown / reset procedures

9.2.3 Static Routes

The first thing we want to do if there are any routers on the nets. of the WMG or RF-C! is add them to the /etc/hosts file. Therefore a name is associated with each router's ip address.

Static routes are usually only used in conjunction with a /etc/defaultrouter. You might do so if you had a couple of networks which you did not want to go through your defaultrouter. In that case, you will probably want to make the routes permanent, by adding the route commands to the /etc/rc2.d/S72inetsvc file. At any time, you can add static routes to your machine via the route command. The standard syntax for adding a network route is:

```
route add net remote-network-ip "router's-name" hop-count
```

remote-network-ip is the network you are adding a route to. "router's-name" is the name you associated to the ip address in the /etc/hosts file of the router that leads to that remote-network. hop-count is an integer which identifies the number of gateways that you must go through to get to the remote-network. A network that is directly connected to your machine would have a hop count of 0 (i.e., the 177.10.16.0 net in the example below). A remote-network that is directly connected to a gateway-machine that is, in turn, on the same network as your machine would have a hop count of 1 (i.e., the 177.10.17.0 net in the example below).

For example, on the following network:

```
YOUR-MACHINE---(177.10.16.0 NET)
NET YOU WANT TO ROUTE TOO---(177.10.17.0 NET)
THROUGH router-1---(177.10.16.1)
```

You could execute the following command from your machine, in order to create a static route to the 177.10.17.0 net:

```
route add net 177.10.17.0"router-1" 1
```

(router-1 has a entry in the /etc/hosts file with a association 177.10.16.1)

You then want to make the routes permanent in case you reset the WMG's CP or RF-C!, by adding the route commands to the /etc/rc2.d/S72inetsvc file by using a editor like "vi". After you have completed all your network changes we suggest resetting the WMG's CP or RF-C! by following the proper shutdown / reset procedures

9.2.4 Turning Off Router Functions in the WMG / RF-C!

Making sure the routing function associated with the Solaris operating system are turned off or not operational is very important. If the routing functions are turned on they can hamper the performance of the

WMG and RF-C!.

9.2.5 IP Forwarding

IP forwarding can couple with other network factors in the WMG or RF-C! to cause the WMG or RF-C! to route between network ports, which can cause network problems. To turn off ip forwarding run the following command as well as place it in the /etc/rc2.d/S72inetsvc file by using a text editor like "vi".

```
ndd -set /dev/ip ip_forwarding 0
```

It may be useful to note, that on Solaris machines, ip_forwarding can have three values:

- 0 Never Forward
- 1 Always Forward
- 2 Only forward when two or more interfaces are up

The above steps result in the ndd /dev/ip ip_forwarding variable being changed from "1" to "0", which prevents routing.

9.2.6 Turn Off in.rdisc

Turn off in.rdisc which is a routing protocol that may come on if you don't have a defaultrouter defined. To turn it off run the following command:

```
# mv /usr/sbin/in.rdisc /usr/sbin/rdisc.save
```

After you have completed all your network changes we suggest resetting the WMG's CP or RF-C! by following the proper shutdown / reset procedures

9.2.7 Turn off the "RIP" functionality on each interface

The RIP protocol will only come on through "in.routed" if there isn't a define defaultrouter. In case there isn't a define defaultrouter to keep RIP from turning on add norip lines to the /etc/gateways file for all interfaces. For example to create a /etc/gateway if there isn't one define run the following command in the /etc directory:

```
# touch gateways
```

Then edit it using a editor like "vi" to add the following commands:

```
norip le0  
norip qe0  
norip qe1  
norip qe2  
norip qe3
```

After you have completed all your network changes we suggest resetting the WMG's CP or RF-C! by following the proper shutdown / reset procedures

9.3 Clarifications and Exceptions

SITG may be contacted with regard to these matters and any other issues i.e. software installation, system problems, test procedures, etc. at 1 800 759-7243. Tell the operator to transfer the call to the Systems Integration and Test department.

9.3.1 RF-Baton! Issues:

There have been customer reports of missed pages in systems using Baton! software versions greater than 1.0.5. This problem has been reported as random and intermittent. While Baton! development engineering is investigating the problem, they have not been able to conclusively determine if the same problem may or may not exist in version 1.2.0. (part of the R01.08.00 system release). SITG, during our system testing, also has not been able to replicate this symptom. It is unknown whether the symptom of missed pages is due to some simulcast distortion problem i.e. launch offset errors, reference frequency drift, or, if the problem is site related i.e. inadequate grounding, high antenna VSWR, unstable AC power, or if it may be localized as a bug in Baton! software introduced after version 1.0.5.

SITG makes no specific recommendation whether to install Baton! version 1.2.0 or not. A DDT has been entered into the Distributed Defect Tracking system, and work is underway by both development engineering and SITG to determine the cause of the reported symptom. SITG also recommends that in areas where transmitter RF coverage overlaps that frequency offsets be used as a means to potentially minimize the occurrence of the symptoms. SITG suggests that Motorola Systems Engineering be contacted for further information regarding the design of a frequency offset plan.

9.3.2 SS7 Issues:

Below is the letter from the product group which clarifies the SS7 testing which took place for release R01.08.00.

```
>From aaron_kistler Wed Aug 5 11:09 CDT 1998
From: Aaron Kistler <aaron_kistler>
Date: Wed, 5 Aug 1998 11:09:54 -0500 (CDT)
Subject: SS7 throughput testing SS7 China 1.1.4
To: akistler
Mime-Version: 1.0
Content-Transfer-Encoding: 7bit
Content-MD5: kc4SBEcRCABo1lfEEBt2bg==
```

The purpose of this release note is to document the testing performed on the SS7 subsystem by SS7 engineering, the Integration Test (IT) group, and the System Integration Test Group (SITG).

Testing by SS7 engineering demonstrated 26 calls/second on the SS7 development system. This test environment consisted of a standalone SS7 configuration with two SS7 links load-shared at 13 calls per second. The system utilized actual Voice Response Units (VRUs) and a simulated Central Processor

(CP). To achieve this call rate with limited hardware resources, a zero call hold time was used.

Testing by the IT group demonstrated 12 calls/second on an IT system for a duration of five to six hours. This test environment consisted of a redundant SS7 configuration with two SS7 links. The system utilized actual VRUs, as well as an actual CP. A call hold time of four seconds was used. Testing of switchover was done at a call rate of three to four calls per second. At this call rate, the system switched over to the standby processor and continued to process calls.

Testing by the IT group demonstrated 12 calls/second on an SITG system for a duration of 36 hours. This test environment consisted of a redundant SS7 configuration with four SS7 links. A call rate of 17 calls/second was successful for six hours. Testing by the IT group in a standalone configuration has also successfully demonstrated 12 calls per second for a duration of 72 hours. All call rates were tested across 120 voice circuits.

Because of limitations in the Ameritec bulk call generator used by the IT group, call rate appears to be limited to 17 calls/second. Further efforts will be directed at moving to another Ameritec bulk call generator in the SITG lab. This unit has increased capacity that allows calls to be placed on 240 voice circuits. This increased capacity should be able to provide the 25 calls/second rate that is required to demonstrate a 200,000 subscriber system at .45 Busy Hour Call Rate.

----- End Forwarded Message -----

9.3.3 Neca Issues:

Patience should be used when viewing and configuring basestation parameters via the Neca GUI. This is because different query information has more data than other query fields. If query fails try again, however make sure that the query has first finished.

9.3.4 Nucleus Issues:

There is a known bug for Nucleus SCM Ver4.030 which causes the Nucleus to sporadically reset under heavy load conditions.