BCM-IVR 2.1 Upgrade Guide

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Revision History

July 2006	Standard 1.0.

Preface

Scope

Business Communications Manager (BCM) with Interactive Voice Response (IVR) capabilities is a communications platform that delivers multimedia voice processing, business telephony applications, and data networking services.

The ***BCM-IVR 2.1 Upgrade*** manual explains how to upgrade a BCM-IVR 1.X system to a BCM-IVR 2.1 system. It further explains how to port existing applications to run on the upgraded BCM-IVR 2.1. This manual is not intended to replace individual software manuals. It is meant only to be used as a supplement to them.

Intended Audience

This manual is intended for both IVR Application Developers and BCM-IVR System Administrators. This manual assumes that the reader is familiar with:

- BCM application development;
- site-specific operating procedures relating to the BCM;
- specific application functions performed by the BCM; and
- other equipment to which the BCM may be connected.

Basic knowledge of your operating system software is also assumed.

How to Get Help

This section explains how to get help for Nortel products and services.

Finding the latest updates on the Nortel Web site

The content of this documentation was current at the time the product was released. To check for updates to the latest documentation for the MPS 500 and 1000, click one of the following links:

MPS 500	Takes you directly to the Nortel page for MPS 500 documentation at www130.nortelnetworks.com/cgi-bin/eserv/cs/main.jsp?cscat=DOCUMENTATION&resetFilter=1&tranProduct=12605
MPS 1000	Takes you directly to the Nortel page for MPS 1000 documentation at www130.nortelnetworks.com/cgi-bin/eserv/cs/main.jsp?cscat=DOCUMENTATION&resetFilter=1&tranProduct=11721

Getting Help from the Nortel Web site

The best way to get technical support for Nortel products is from the Nortel Technical Support web site:

www.nortel.com/support

This site provides quick access to software, documentation, bulletins, and tools to address issues with Nortel products:

- download software, documentation, and product bulletins
- search the Technical Support web site and the Nortel Knowledge Base for answers to technical issues
- sign up for automatic notification of new software and documentation for Nortel equipment
- open and manage technical support cases

Getting Help over the phone from a Nortel Solutions Center

If you do not find the information you require on the Nortel Technical Support web site, and have a Nortel support contract, you can also get help over the phone from a Nortel Solutions Center.

In North America, call 1-800-4NORTEL (1-800-466-7835).
Outside North America, go to the following web site to obtain the phone number for your region:

www.nortel.com/callus

Getting Help from a specialist by using an Express Routing Code

To access some Nortel Technical Solutions Centers, you can use an Express Routing Code (ERC) to quickly route your call to a specialist in your Nortel product or service. To locate the ERC for your product or service, go to:

www.nortel.com/erc

Getting Help through a Nortel distributor or reseller

If you purchased a service contract for your Nortel product from a distributor or authorized reseller, contact the technical support staff for that distributor or reseller.

How to Use This Manual

This manual uses many standard terms relating to computer systems, software application functions, and the Internet. However, it contains some terminology that can be explained only in the context of the MPS Series. Refer to the *Glossary of Nortel's Media Processing Server Series Terminology* for definitions of MPS Series specific terms.

Read this manual from start to finish at least once. When you are familiar with the document, you can use the Table of Contents to locate topics of interest for reference and review.

If you are reading this document online, use the cross-reference links (shown in blue) to quickly locate related topics. Position your cursor over the cross-reference link and click once. Click any point in a Table of Contents entry to move to that topic. Click the page number of any Index entry to access that topic page.

Familiarize yourself with various specialized textual references within the manual, see ***Conventions Used in This Manual*** on page 12.

Periphonics is now part of Nortel. The name Periphonics, and variations thereof, appear in this manual only in reference to a product (for example, the `PERImps` package, the **`perirev`** command, and so on).

Organization of This Manual

This manual is organized according to the needs and requirements of two distinct BCM-IVR users: System Administrators and Application Developers.

Chapter 1 — Introduction to the BCM - IVR Upgrade

Overviews the upgraded Business Communication Manager (BCM) with Interactive Voice Response capabilities. Explains how to access documentation on Helmsman.

Chapter 2 — Administrator Upgrade on Windows Workstation

Discusses prerequisites and steps necessary to upgrade the BCM-IVR PeriView Consolidator workstation.

Chapter 3 — Administrator Upgrade on BCM 4.0 Platform

Discusses how to manage BCMs using Element Manager. Explains how to add BCMs to the Element Manager administration list.

Chapter 4 — Developer Upgrade on Windows Workstation

Discusses steps necessary to port PeriProducer 2.30 applications to PeriProducer 3.00, as well as porting events and conversion issues.

Chapter 5 — Developer Upgrade on Fedora Workstation

Discusses steps necessary to configure the Fedora workstation to compile C/C++ code for User Defined External Call Functions.

Chapter 6 — Database Access Configuration

Discusses how to configure the Windows workstation for external database access.

Conventions Used in This Manual

This manual uses different fonts and symbols to differentiate between document elements and types of information. These conventions are summarized in the following table.

Conventions Used in This Manual (Sheet 1 of 2)

Notation	Description
Normal text	Normal text font is used for most of the document.
important term	The Italics font introduces new terms, highlights meaningful words or phrases, or distinguishes specific terms from nearby text.
`system command`	This font indicates a system command or its arguments. Enter such keywords exactly as shown (that is, do not fill in your own values).
`command`, **`condition`** and **`alarm`**	Command, Condition and Alarm references appear on the screen in magenta text and reference the *Command Reference Manual*, the *MPS Developer User's Guide*, or the *Alarm Reference Manual*, respectively. Refer to these documents for detailed information about **`Commands`**, **`Conditions`**, and **`Alarms`**.
`file name / directory`	This font highlights the names of disk directories, files, and extensions for file names. It also shows what is displayed on a text-based screen (for example, to show the contents of a file.)
on-screen field	This font indicates field labels, on-screen menu buttons, and action buttons.
<KEY NAME>	A term that appears within angled brackets denotes a terminal keyboard key, a telephone keypad button, or a system mouse button.
Book Reference	This font indicates the names of other publications referenced within the document.
cross-reference	A cross-reference appears on the screen in blue. Click the cross-reference to access the referenced location. A cross-reference that refers to a section name accesses the first page of that section.
	The Note icon identifies notes, important facts, and other keys to understanding.
	The Caution icon identifies procedures or events that require special attention. The icon indicates a warning that serious problems may arise if the stated instructions are not followed implicitly.

Conventions Used in This Manual (Sheet 2 of 2)

Notation	Description
	The flying Window icon identifies procedures or events that apply to the Windows operating system only. (1)
	The Solaris icon identifies procedures or events that apply to the Solaris operating system only. (2)

(1): Windows and the flying Window logo are either trademarks or registered trademarks of Microsoft Corporation.
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Solaris and Windows Conventions

This manual depicts examples (command line syntax, configuration files, and screen shots) in Solaris format. Windows-specific commands, procedures, or screen shots are shown when required. The following table lists general operating system conventions used with either the Solaris or Windows operating system.

	Solaris	Windows
Environment	`$PPROHOME`	`%PPROHOME%`
Paths	`$PPROHOME/bin`	`%PPROHOME%\bin`
Command	**`<command> &`**	**`start /b <command>`**

Two-Button (Windows) vs. Three-Button (Solaris) Mouse

<SELECT>	Left button
<ADJUST>	Left and Right together
<MENU>	Right button

<SELECT>	Left button
<ADJUST>	Middle button
<MENU>	Right button

Trademark Conventions

The following trademark information is presented here and applies throughout for third party products discussed within this manual. Trademarking information is not repeated hereafter.

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BCM - IVR 2.1 Upgrade Overview

This chapter covers:

1. **The BCM-IVR 2.1 Upgrade**
2. **New or updated features of BCM-IVR 2.1**
3. **Pre-requisites for the BMC-IVR 2.1 upgrade**
4. **Transition issues**
5. **Documentation issues**

The BCM-IVR 2.1 Upgrade

Business Communication Manager 4.0 (BCM) is a fully integrated communication system for small businesses, government networks, retail networks, and enterprise branch offices.

The BCM 4.0 offers interactive voice response capabilities through Interactive Voice Response 2.1 (IVR 2.1). IVR 2.1 is a suite of products that allows businesses to create applications callers can use to access information by responding to a series of prompts through their touchtone phones.

The IVR applications are developed for specific customer needs and in many cases are integrated with databases to enable real-time queries and updates. Some examples of IVR applications are:

- A pharmacy's application that lets customers access their accounts, receive real-time status on their prescription refills, and request prescription refills.
- A bus station's IVR application that lets customers book seats on a trip or review projected departure times.
- A bookstore's application that lets customers hear store hours, purchase books, and check the delivery of an existing order.

The collection of hardware and software that creates and administers IVR applications on BCMs is collectively referred to as the BCM-IVR 2.1 system.

New or Updated Features of BCM-IVR 2.1

In previous BCM-IVR systems (such as the BCM-IVR 1.X system), both the BCM 3.X and the IVR 1.X operated on an Embedded Windows NT platform. The IVR 1.X development and administration tools (PeriProducer 2.X, PeriStudio 1.X, PeriReporter, and PeriView) ran on a Windows NT/2000 platform.

The BCM-IVR 2.1 system requires both the Nortel Carrier Grade Linux (NCGL) platform and the Windows 2000 platform. The BCM 4.0 operates on the NCGL platform. The BCM 4.0 runs IVR applications developed and administered with the latest releases of IVR development and administration tools: PeriProducer 3.00, PeriStudio 2.20, PeriView 2.1, and PeriReporter 1.21. These IVR development and administration tools run on the Windows 2000 platform.

In the BCM-IVR 2.1 system, BCMs are managed with Element Manager, not Unified Manager (for more information about Element Manager, see *BCM 4.0 Networking Configuration Guide*).

In the BCM-IVR 2.1 system, PeriView and PeriView Consolidator reside on a Windows 2000 workstation, and BCM 4.0 resides on an NCGL workstation. The BCMs IVR capabilities are managed from any user PC by pointing the user PC web browser to the PeriView/PeriView Consolidator workstation. A third workstation with

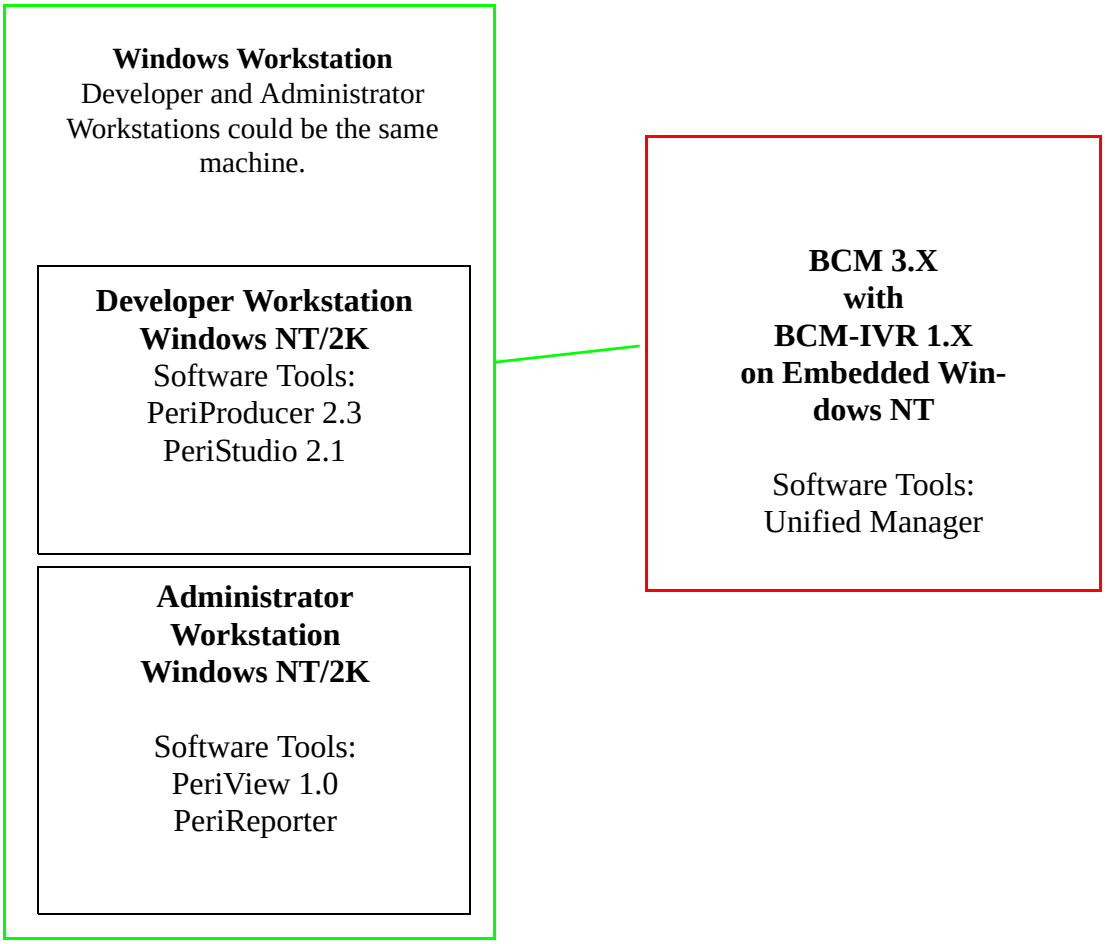
Fedora Core 3 is required if IVR applications use C/C++ external call functions.

As such, the configuration of the new BCM-IVR 2.1 system differs from that of the BCM-IVR 1.X system.

BCM-IVR 1.X Configuration

The following figure shows a graphical representation of a typical BCM-IVR 1.X configuration.

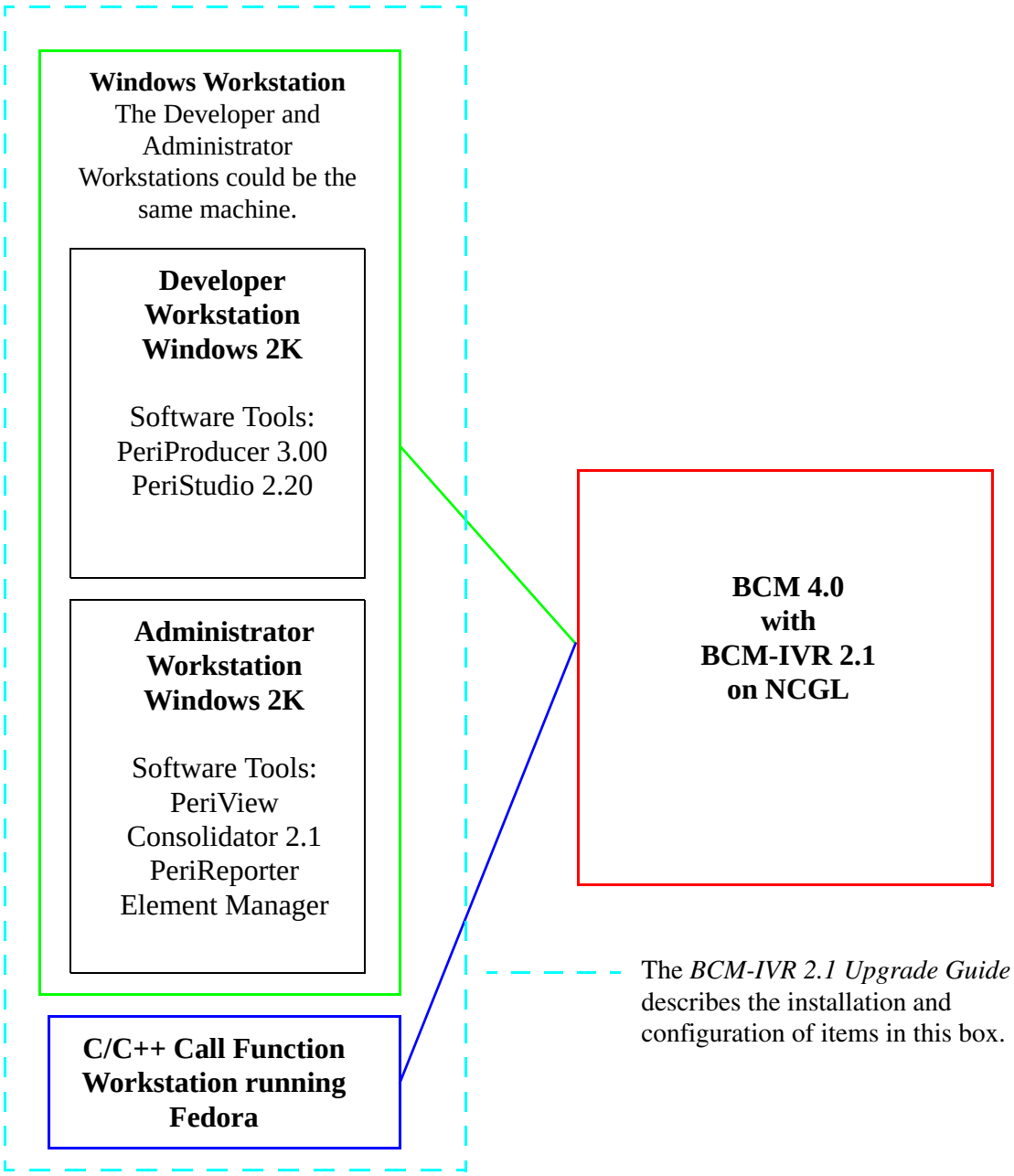
Typical BCM-IVR 1.X
System Configuration



BCM-IVR 2.1 Configuration

The following figure shows a typical BCM-IVR 2.1 system configuration.

Typical BCM-IVR 2.1 System Configuration



Pre-Requisites for the BCM-IVR 2.1 Upgrade

Application Developer

Application Developers create applications that run on the BCM-IVR system. Application Developers must upgrade their developer workstation and install Fedora Core 3 to upgrade any external C/C++ Call Functions in existing applications. Chapters 4 and 5 are intended for Application Developers.

An Application Developer must obtain the following CDs to upgrade the BCM-IVR system:

- *MPS 2.1 Software, Documentation and Update CD*—MPS 2.1 Patch Bundle 9, PeriProducer 3.00, PeriStudio 2.20, PeriView 2.1 and PeriReporter 1.21 and supporting documentation
- *BCM-IVR Toolkit CD*—contains BCM Toolkit for PeriProducer 3.00, NCGL Development Environment, userdb.xml.BCM, BCM-IVR Integration Supplement, PeriProducer for the BCM Guide, BCM-IVR 2.1 Upgrade Guide, ReadMe_1st.

An Application Developer must have a Windows 2000 operating system.

If the IVR applications use C/C++ call functions, an Application Developer must also have a PC with Fedora installed. See “Overview” on page 88.

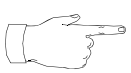
System Administrator

System Administrators monitor and maintain the BCM-IVR system. System Administrators must uninstall existing PERI packages, install BMC/IVR 2.1 PERI packages, and install PeriView Consolidator. System Administrators are also responsible for managing the BCMs using Element Manager. Chapters 2 and 3 are intended for System Administrators.

A System Administrator must obtain the following CDs in order to upgrade the BCM-IVR system:

- *MPS 2.1 Software, Documentation and Update CD*—MPS 2.1 Patch Bundle 9, PeriProducer 3.00, PeriStudio 2.20, PeriView 2.1 and PeriReporter 1.21 and supporting documentation
- *BCM-IVR Toolkit CD*—contains BCM Toolkit for PeriProducer 3.00, NCGL Development Environment, userdb.xml.BCM, BCM-IVR Integration Supplement, PeriProducer for the BCM Guide, BCM-IVR 2.1 Upgrade Guide, ReadMe_1st.

A System Administrator must have a Windows 2000 operating system.



Before proceeding with this upgrade, the System Administrator must obtain ported IVR applications from the Application Developer. See “Porting PeriProducer 2.30 Applications to PeriProducer 3.00” on page 82.

Transition Issues

Transition Issues for the Application Developer

In upgrading from BCM-IVR 1.X to BCM-IVR 2.1, Application Developers may encounter transition issues due to new or obsolete PeriProducer features.

Database Access Modes

BCM-IVR 2.1 supports VTCPD and Host database access.

BMC/IVR 2.1 no longer supports native mode or Open Database Connectivity access (ODBC). Existing applications configured for native mode or ODBC access must be reconfigured.

For more information about configuring your BCM-IVR 2.1 system for database access. **See "Database Access Configuration" on page 91.**

New PeriProducer 3.00 Blocks

PeriProducer 3.00 introduces several new toolkit blocks; however, some are not supported in the BCM environment. The following table lists the new blocks and whether they are supported in the BCM Environment.

New PeriProducer 3.00 Blocks

Block	Function
Abort	Abort input/output
Bridge	Not supported
Call Control	Send data to telephony protocol layer/perform a hookflash (moved from Originate block in PeriProducer 2.30)
Call Conferencing	Not supported
Call Progress Detection	Manage call progress detection functions
Edit Sequence	Manage touch tone input editing and user edit sequences
Line Operations	Perform phone line operations (such as offer call, accept call, get line/application resource from pool)
Media Operations	Not supported
Select Input	Not currently implemented

See the *PeriProducer 3.00 User's Guide* for full descriptions of the blocks.

Blocking/Non-blocking Execution

Many PeriProducer blocks provide the option of choosing blocking (execution waits at that block until it receives success/failure message) or non-blocking (execution

continues to next block without waiting for message) execution. A Wait checkbox enables/disables blocking execution for the applicable blocks. See Blocking/Non-blocking Operation in the *PeriProducer 3.00 User's Guide* for details.

Call Progress Detection

Using Call Progress Detection (CPD) is updated in PeriProducer 3.00. CPD is controlled by dynamically enabling and disabling specific tone/event detection in the Call Progress Detection block. All CPD events return to the application as the cpd condition with the specific event (Busy, Reorder, and so on) in the condition data. See the *PeriProducer 3.00 User's Guide* for details.

PeriProducer 3.00 Block Changes

Many PeriProducer 3.00 blocks have amended or improved function.

Connection IDs (Caller I/O blocks)

Phone line and resource numbers are replaced with Connection IDs (CIDs). Connection IDs indicate the component name and the line number of the connection. For example, the CID mps24.1 indicates the connection is from line one on component mps24. The default Connection ID for the current phone line is available in the System folder's DefaultCID data card. The CID for an operation is supplied by the system (for example, when a resource is allocated).

Accessory Toolkit Blocks

The Table Search, Table Sort, Date Calculations, and Send email blocks are moved from the main toolkit to the accessory toolkit.

Answer Block

Continue on Ring Detect Removed

The Continue on Ring Detect option is removed.

Get Phone Number Options Removed

The Get Dialed Phone Number and Get Caller's Phone Number options are supported only with certain protocols. See the *BCM 4.0 Networking Configuration Guide* for more details.

Disconnect Block

Abandoned Call Counter Removed

The MPS does not automatically track system abandoned calls. The Mark as abandoned option is removed. To track abandoned calls, create application statistics and use MPS Reporter to display the reports

System Block

Diagnostic Functions Removed

The diagnostics function is removed.

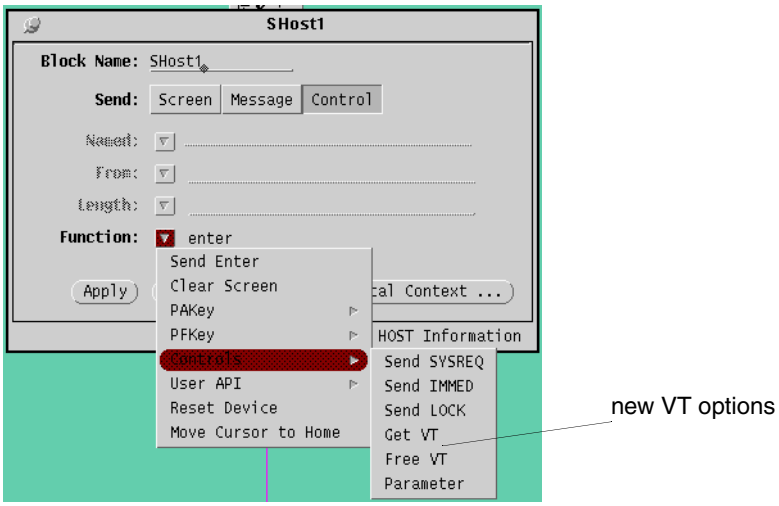
Condition Data

The Get Condition Data function is added. This function replaces using the condition-data call function. Get Condition Data requires a folder with the same structure, data names, and data types expected with the condition.

Send Host Block

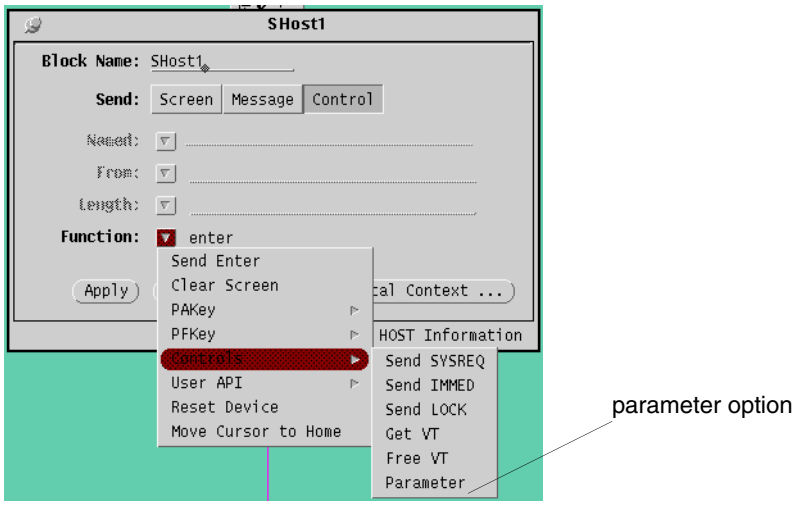
Virtual Terminal (VT) Allocation

VT allocation functions are available from the Send Host block. These functions replace the VT allocation Environment block options.



Setting Host Environment Parameters

Host environment parameters are sent from the Send Host block. This function replaces the Environment block "host" option.



Receive Host Block

Asynchronous Operation

The Asynchronous checkbox is replaced by the Wait checkbox. Receive Host operates asynchronously when the Wait checkbox is unchecked.

Send Fax Block

Fax Composition Removed

The Fax Composition feature is not supported. All controls and options used to create and store composed faxes are removed.

Send Fax from TIFF File

PeriProducer 3.00 supports sending faxes directly from TIFF format files. TIFF faxes no longer need to be imported into a MultiMedia File and accessed by a media storage token.

Fax Mode Removed

PeriProducer 3.00 supports only Group 3 faxes.

Receive Fax Block

Receive Fax Direct into TIFF File

Applications can save an incoming fax directly to a TIFF-format file. In previous versions of PeriProducer, faxes were stored in MultiMedia Files and had to be exported to individual TIFFs.

Local Station ID

The user can specify the Local Station ID (which typically represents the phone number of the station receiving the fax) in the block. The Local Station ID is typically displayed on the transmitting fax machine.

Fax Mode Removed

PeriProducer 3.00 supports only Group 3 faxes.

Originate Block

Moved Functions

All bridging functions are moved to the new 3.00 Bridge Block. Hookflash is moved to the Call Control Block. The End Transfer function is deleted and the user can use the Disconnect block instead.

Record Block

Asynchronous Recording

Asynchronous recording provides an unlimited duration message. Asynchronous recording is explicitly started and stopped by Begin and End functions of the Record block.

Moved Functions

Element deletion functions are moved to the Media Operations block.

Resource Block

Asynchronous Execution Changes

There is no longer an Async checkbox in the Resource block. To perform the resource receive asynchronously, clear the Wait box.

Discontinued Features and Functions

Fax Composition

Fax composition is not supported in PeriProducer 3.00. Faxes to be sent must be created by external applications or received (and stored for later use) by the BCM.

Hardware Properties Window

The Hardware Properties Window is removed.

Unsupported Resources

PeriProducer 3.00 no longer supports the following resources:

- mps
- abb
- asdi
- ast
- iwr
- ppd
- modem
- mts
- iscp
- ctx
- lcr

Obsolete Functions

The Media Operations block in PeriProducer has rendered obsolete the file-to-message, message-to-item and message-to-file functions.

Other PeriProducer Changes

Enhanced Condition Data

Condition Data is now returned as a data structure consisting of different field/value pairs. To access the expanded condition data, use the System block's "Get Condition Data" function and specify the appropriate response folder (templates provided in `%PPROPATH%\sample\folders`). To access all of the condition data, the folder must have data cards defined as the same name and type as the associated condition data field. The data for one field only can be obtained by specifying a datacard whose name matches the desired field.

The condition data for many conditions have a Status field. The Status field value is automatically copied into the System folder's ConditionData card.

Environment Options

Many PeriProducer 2.30 Environment options are rendered obsolete or replaced by new environment options, block built-in functions or both, in PeriProducer 3.00. The following table lists the 2.30 Environment options and the analogous 3.00 option (if any). Comments are provided where appropriate.

Environment Options Conversions Sheet 1 of 3

2.30 Environment Option	3.00 Equivalent
Phone Environment	
answer	Unsupported as environment option. Use the Answer block (Answer function) to answer a call.
first	DtmfFirst (Application and System Environment options)
inter	DtmfInter (Application and System Environment options)
keepterm	Unsupported as environment option. Use the "Retain" option (for the termination character) in Edit Sequence block.
termchar	Unsupported as environment option. Use the Edit Sequence block to enable/set a termination character.
total	LineTotalCall (Application and System Environment options)
typeahead	Unsupported
Phone Line Task Environment	
backsp	Unsupported as environment option. Use the Edit Sequence block to enable/set a backspace edit sequence.
delete	Unsupported
eXtext	Unsupported. Use the Edit Sequence block to enable/set user edit sequences.
Phone Resource Server Environment	
prs	Unsupported
tstop	Unsupported as environment option
Message Recording Environment	
intersil	RecInterSil (Application and System Environment options)
Call Progress Detection Environment	
cpansup	Unsupported
pickup	Unsupported
Speech Management Environment	
clear	Supported for legacy applications only. Use the Abort block with the "Caller I/O Only" option enabled.
vioabort	Unsupported as environment option. Use the Abort block.
Host Environment	
er	er
freevt	Supported for legacy applications only. Use the Send Host block "Free VT" (in Control > Function > Controls) option.

Environment Options Conversions Sheet 2 of 3

2.30 Environment Option	3.00 Equivalent
getvt	Supported for legacy applications only. Use the Send Host block "Get VT" (in Control > Function > Controls) option.
headermode	headermode
hostctl	hostctl
intime	intime
parameter	Supported for legacy applications only. Use the Send Host block "parameter" (in Function > Controls) option.
refer	refer
rfno	rfno
session	session
setaid	setaid
unlocks	unlocks
usepool	usepool
Advanced Phone Line Management	
phone	Unsupported as environment option
Optional Exception Conditions	
rngback	Unsupported as environment option
uedit3	Unsupported as environment option (in the context of taking a digital system out of wait for an outdial complete message)
Generic Environment Options	
Phone Line Manager Options	Superseded by "Application and System Options"
Vengine Options	Vengine Options
VENGINE Environment	
alarmdbtask	alarmdbtask
apprestart	apprestart
centurymark	centurymark
debug	debug
deltimedcall	deltimedcall
hnowait	Unsupported (a corresponding VENGINE runtime option is available)
intermsg	intermsg
maxmessage	Unsupported
mode	mode

Environment Options Conversions Sheet 3 of 3

2.30 Environment Option	3.00 Equivalent
notice	notice
numset	numset
rscertime	rscertime
rscintime	rscintime
setvpsline	setvpsline
softterm	softterm
speak	speak
timedcall	timedcall
unnotice	unnotice
vmstimedcall	vmstimedcall
vpsrcvtime	vpsrcvtime
webtimeout	webtimeout

Conditions

When a PeriProducer 2.30 application is opened in 3.00, PeriProducer attempts to automatically convert handle conditions to their counterparts in 3.00. Condition conversions shown with a preceding dollar sign ("$") are displayed in the application as the 2.30 condition but are automatically converted to the appropriate 3.00 condition at runtime.

The following table lists the 2.30 condition, the corresponding 3.00 condition (if any), and, if applicable, how PeriProducer 3.00 converts the condition when a 2.30 application is ported to 3.00.

Conditions Conversion Sheet 1 of 10

2.30 Condition	3.00 Condition	Conversion
abend	abend	abend
addfail	importfail w/Status "ErrInUse" in condition data	$addfail
addsucc	importcmp	importcmp
altlinkdown	altlinkdown	altlinkdown
ansfail	answerfail	answerfail
asrdet	asrdet	asrdet
asyncdata	Unsupported	
asyncfail	Unsupported	

Conditions Conversion Sheet 2 of 10

2.30 Condition	3.00 Condition	Conversion
autofail	detinputfail	detinputfail
autotim	autotim	autotim
avserr	avserr	avserr
badoperation	badoperation	badoperation
badparameter	badparameter	badparameter
calltim	calltim	calltim
carloss	Unsupported	
ccs7cc	ccs7cc	ccs7cc
chartim	getinputfail w/Status "ErrInter" field in condition data	getinputfail
cmrhigh	Unsupported	
cmrlow	Unsupported	
comfail	comfail	comfail
conn	answercmp	answercmp
crefer	Unsupported	
crepeat	Unsupported	
crepmax	Unsupported	
cticond	cticond	cticond
ctidown	ctidown	ctidown
ctifail	ctifail	ctifail
ctiup	ctiup	ctiup
ctxcc	Unsupported	
ctxfailcc	Unsupported	
ctxokcc	Unsupported	
cvoice	Unsupported	
dcdown	Unsupported	
dcup	Unsupported	
deadlock	deadlock	deadlock
delcomp	delcmp	delcmp
delfail	delfail	delfail
dialtn	Unsupported	
disable	Unsupported	

Conditions Conversion Sheet 3 of 10

2.30 Condition	3.00 Condition	Conversion
disc	Dependent upon event that caused disc condition.	
	disc (caller hangup)	$disc
	disccmp (system-initiated disconnect)	$disc
discfail	discfail w/Status field in condition data	$discfail
dtmfzl	recordfail w/Status "ErrZeroLengthDTMF" in condition data	recordfail
dupkey	dupkey	dupkey
dupvalidx	dupvalidx	dupvalidx
enable	Unsupported	
endfail	discfail	$endfail
endfile	endfile	endfile
error	error	error
ertimeout	Dependent upon event that caused ertimeout condition	
	ertimeout (gen'd by VENGINE)	$ertimeout
	hrcvmapfail w/Status "ErrTimeout" in condition data (failed receive map)	$ertimeout
	hrcvtxtfail w/Status "ErrTimeout" in condition data (failed receive text)	$ertimeout
expired	expired	expired
faxdet	faxdet	faxdet
forcefree	forcefree	forcefree
forward	Unsupported	
fromphone	fromphone	fromphone
frstim	getinputfail w/Status "ErrFirst" in condition data	getinputfail
ftomfail	Unsupported	
ftomsucc	Unsupported	

Conditions Conversion Sheet 4 of 10

2.30 Condition	3.00 Condition	Conversion
getfail	Dependent upon event that caused getfail condition	
	getfail (gen'd by VENGINE)	$getfail
	getrsrcfail (failed resource get request)	$getfail
	rcvfaxfail w/Status "ErrNoFaxAvail" in condition data (failed receive fax when fax not available)	$getfail
	sndfaxfail w/Status "ErrNoFaxAvail" in condition data (failed send fax when fax not available)	$getfail
getvtfail	hgetvtfail	hgetvtfail
getvtpass	hgetvtcmp	hgetvtcmp
gotres	Dependent upon event that caused gotres condition	
	getrsrccmp	$gotres
	rcvfaxcmp	$gotres
	sndfaxcmp	$gotres
green	Unsupported	
hctloff	hctloff	hctloff
hctlon	hctlon	hctlon
heldres	Unsupported	
hkfcomp	hookflshcmp	hookflshcmp
hkffail	hookflshfail	hookflshfail
hostasyncevt	hostasyncevt	hostasyncevt
hostdown	hostdown	hostdown

Conditions Conversion Sheet 5 of 10

2.30 Condition	3.00 Condition	Conversion
hostfail	Dependent upon event that caused hostfail condition	
	hrcvmapfail w/Status "ErrNoData" or "ErrTimeout" in condition data (failed to receive map)	$hostfail
	hrcvtxtfail w/Status "ErrNoData" or "ErrTimeout" in condition data (failed to receive text)	$hostfail
	hsndmapfail (failed to send map)	$hostfail
	hsndtxtfail (failed to send text)	$hostfail
	hsndaidfail (failed to send AID key)	$hostfail
hostup	hostup	hostup
hstatdata	hstatdata	hstatdata
idle	Unsupported	
inf	Dependent upon event that caused inf condition	
	inf (gen'd by VENGINE)	$inf
	rcvfaxfail w/Status "ErrNoFaxAvail" in condition data (failure to receive fax)	$inf
	recordfail w/Status "ErrZeroLengthDTMF" or "ErrZeroLengthSilence" in condition data (failure to record CMR message)	$inf
intertimeout	intertimeout (gend' by VENGINE)	$intertimeout
invreq	invreq	invreq
ioerr	ioerr	ioerr
iscpf	iscpf	iscpf
isdncc	Unsupported	
iupdbusy	Unsupported	
iupdcomp	Unsupported	
iupdfail	Unsupported	
lengerr	lengerr	lengerr
linkdown	linkdown	linkdown

Conditions Conversion Sheet 6 of 10

2.30 Condition	3.00 Condition	Conversion
lockfail	lockfail	lockfail
logdeny	logdeny	logdeny
lost	Unsupported	
marshall	mailshall	marshall
mmfhigh	mmfhigh	mmfhigh
mmflow	mmflow	mmflow
modvar	modvar	modvar
mpscc	Unsupported	
mpsinfo	Unsupported	
mpsoc	Unsupported	
mpsof	Unsupported	
mtoffail	exportfail	exportfail
mtofsucc	exportcmp	exportcmp
nilobjref	nilobjref	nilobjref
nonexistobj	nonexistobj	nonexistobj
norecfound	norecfound	norecfound
norestart	norestart	norestart
nospace	nospace	nospace
notfnd	notfnd	notfnd
notimpl	notimpl	notimpl
notlogon	notlogon	notlogon
notopen	notopen	notopen
oa	speakcmp w/Status "Abort" in condition data	speakcmp
oc	Dependent upon event that caused oc condition	
	speakcmp w/Status "Done" in condition data (completed speak request)	$oc
	sndfaxcmp (completed send fax)	$oc
	sndrsrccmp (completed send resource)	$oc

Conditions Conversion Sheet 7 of 10

2.30 Condition	3.00 Condition	Conversion
of	Dependent upon event that caused of condition	
	of (gen'd by VENGINE)	$of
	sndfaxfail w/Status "ErrNoFaxAvail" in condition data (failed send fax)	$of
	sndrsrcfail (failed send resource)	$of
	speakfail (failed speak request)	$of
ofaxdet	Unsupported	
orberr	orberr	orberr
oscoc	sndrsrccmp	
oscof	sndrsrcfail	
outbad	origfail w/Status "ErrInvalidLineState" in condition data	origfail
outbsy	origfail w/Status "ErrBusy" in condition data	origfail
outcomp	origcmp	origcmp
outfail	origfail w/Status "ErrBusy", "ErrInvalidLineState", ErrNoAnswer", or "ErrRejected" in condition data	$outfail
outnoa	origfail w/Status "ErrNoAnswer" in condition data	origfail
outrej	origfail w/Status "ErrRejected" in condition data	origfail
outvoa	Unsupported	
pgid	pgid	pgid
pgml	pgml	pgml
pgun	pgun	pgun
prsfree	Dependent upon event that caused prsfree condition	
	prsfree (gen'd by VENGINE)	$prsfree
	freersrccmp (completed free resource)	$prsfree
qiderr	qiderr	qiderr

Conditions Conversion Sheet 8 of 10

2.30 Condition	3.00 Condition	Conversion
qzero	qzero	qzero
rcverr	rcvrsrcfail	$rcverr
rcvnull	Dependent upon event that caused rcvnull condition	
	rcvnull (gen'd by VENGINE)	$rcvnull
	hrcvmapfail w/Status "ErrNoData" in condition data (failed receive map)	$rcvnull
	hrcvtxtfail w/Status "ErrNoData" in condition data (failed receive text)	$rcvnull
rcvoice	Unsupported	
rdcdown	Unsupported	
rdcup	Unsupported	
rdisable	Unsupported	
red	Unsupported	
refbad	transferfail w/Status "ErrInvalidLineState" in condition data	transferfail
refbeg	transfercmp	transfercmp
refcan	disccmp	$refcan
reffail	transferfail w/Status "ErrInvalidLineState" or "ErrRejected" in condition data	$reffail
refrej	transferfail w/Status "ErrRejected" in condition data	transferfail
reftim	calltim	$reftim
renable	Unsupported	
reorder	Unsupported	
resumefail	resumefail	resumefail
rgreen	Unsupported	
ring	alertcmp	alertcmp
rinfail	alertfail	alertfail
rlost	Unsupported	
rngback	Unsupported	

Conditions Conversion Sheet 9 of 10

2.30 Condition	3.00 Condition	Conversion
rred	Unsupported	
rscoc	rscoc	rscoc
rscof	rscof	rscof
rsilence	Unsupported	
rvoice	Unsupported	
rxdcdown	Unsupported	
rxdcup	Unsupported	
rxdisable	Unsupported	
ryellow	Unsupported	
sentcp	sndtonecmp	sndtonecmp
serverdown	serverdown	serverdown
setfail	ctrlrsrcfail	$setfail
setres	ctrlrsrccmp	ctrlrsrccmp
silence	Unsupported	
silzl	recordfail w/Status "ErrZeroLengthSilence" in condition data	recordfail
softterm	softterm	softterm
sqlerr	sqlerr	sqlerr
sslfail	sslfail	sslfail
stoptim	Unsupported	
stpring	Unsupported	
tcapcc	tcapcc	tcapcc
tftprecfail	tftprecfail	tftprecfail
tftprecsucc	tftprecsucc	tftprecsucc
tftpsendfail	tftpsendfail	tftpsendfail
tftpsendsucc	tftpsendsucc	tftpsendsucc
timeres	timeres	timeres
toomanyrows	toomanyrows	toomanyrows
tophonefail	tophonefail	tophonefail
ttdata	getinputcmp	getinputcmp
ttdet	ttdet	ttdet

Conditions Conversion Sheet 10 of 10

2.30 Condition	3.00 Condition	Conversion
ttfail	getinputfail w/Status "ErrFirst" in condition data	$ttfail
uedit0 - uedit3	uedit0 - uedit3	uedit0 - uedit3
unexdata	unexdata	unexdata
unexhost	unexhost	unexhost
unexphone	unexphone	unexphone
valueperr	valueperr	valueperr
voice	Unsupported	
vrto	vrto	vrto
webfail	webfail	webfail
webtimeout	webtimeout	webtimeout
xdisable	Unsupported	
xmtcomp	Unsupported	
xmtfail	Unsupported	
yellow	Unsupported	

Miscellaneous

VRAM Language

VRAM is no longer supported.

Downward Porting of .ppr Source Code

Source code cannot be ported to previous versions of PeriProducer.

MPS Release Level

You must use PeriProducer 3.00 on MPS 2.1 or later.

Transition Issues for the System Administrator

Minor changes to PeriView and PeriView Consolidator impact how System Administrators administer IVR scripts on the BCMs; however, no functionality has been lost (see the *PeriView 2.1 Users Guide*).

System Administrators now manage BCMs through Element Manager (see the *BCM 4.0 Networking Configuration Guide*).

Documentation Issues

Issue

Documentation currently refers to hardware as the MPS.

Wherever the documentation uses MPS, assume that this refers to the BCM-IVR, unless otherwise noted.

2

Administrator on the Windows Workstation

This chapter covers:

1. **Windows Workstation Operating System Upgrade**
2. **BCM-IVR 1.X Uninstall Procedures**
3. **BCM-IVR 2.1 Installation Procedures**
4. **BCM-IVR 2.1 Toolkit Installation**
5. **PeriView 2.1 and PeriView 2.1 Consolidator Installation**
6. **Launching Applications in PeriView**

Windows Workstation Operating System Upgrade

If either the Application Developer workstation or the System Administrator workstation is currently running on Windows NT, both workstations must be upgraded to the Window 2000 operating system. For more information about upgrade prerequisites, see ***Pre-Requisites for the BCM-IVR 2.1 Upgrade*** on page 19.

BCM-IVR 1.X Uninstall Procedures

Uninstall Procedures with MPS 2.1 Software and Document CD

If BCM-IVR 1.X is already on the Windows Workstation, follow these procedures to remove the BCM-IVR 1.X PERI packages prior to installing BCM-IVR 2.1.

1. Ensure PERI packages are installed on the box by either:
   a. running the following command:

```
C:\perl -S perirev.plx outfile=STDOUT
```

The preceding command produces an output similar to the following sample.

```
PERIase         4.7.1
                        PERIMPSPatch Bundle 7
                        PERIrel5Patch Bundle 27 BundleCutDate-20031007
                        PkgCutDate-20020122
PERIfw          1
                        PERIMPSPatch Bundle 7
                        PERIrel5Patch Bundle 27 BundleCutDate-20031007
                        PkgCutDate-20011214
PERIgase        1.0.0
                        PERIMPSPatch Bundle 7
                        PERIrel5Patch Bundle 27 BundleCutDate-20031007
                        PkgCutDate-20020104
PERIglobl       1.1.1
                        PERIrel5Patch Bundle 27 BundleCutDate-20031007
                        PkgCutDate-20010611

PERIgrs         2.2
                        PkgCutDate-20030729
PERIperl        1.0.1
                        PERIrel5Patch Bundle 27 BundleCutDate-20031007
                        PkgCutDate-20020116
PERIplic        1.1.1
                        PERIMPSPatch Bundle 7
                        PERIrel5Patch Bundle 27 BundleCutDate-20031007
                        PkgCutDate-20021004
```

```
PERIppro        2.30
                                PERIMPSPatch Bundle 7
                                PERIrel5Patch Bundle 27 BundleCutDate-20031007
                                PkgCutDate-20010427

PERIpstu        2.20
                                PERIMPSPatch Bundle 7
                                PERIrel5Patch Bundle 27 BundleCutDate-20031007
                                PkgCutDate-20010427

PERIrdb         1.2
                                PERIMPSPatch Bundle 7
                                PERIrel5Patch Bundle 27 BundleCutDate-20031007
                                PkgCutDate-20020117

PERIview        1.0.0
                                PERIMPSPatch Bundle 7
                                PkgCutDate-20020516
```

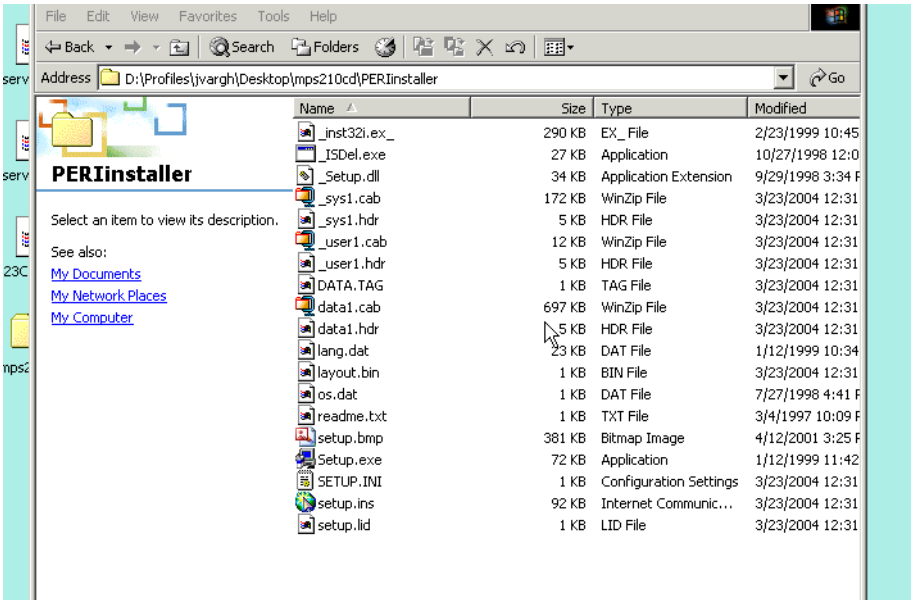
b. by clicking **Setting > Control Panel > Add/Remove**.

The Add/Remove list contains the list of all PERI packages to be uninstalled.

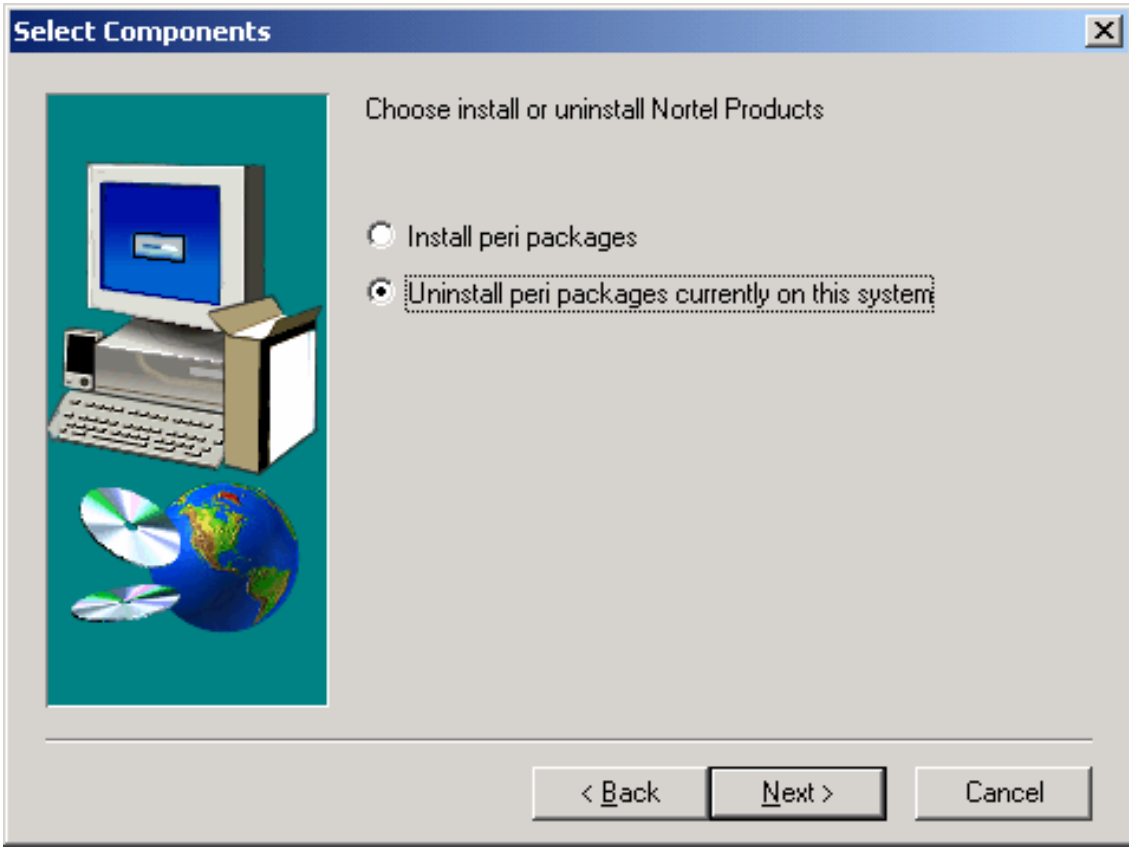
2. Back up old license files by copying `C:\Program Files\Nortel\PERIplic\etc\plservrc` to a safe location.

If you are upgrading your operating system from Windows NT to Windows 2000, back up old license files to an external media other than the Windows Workstation.

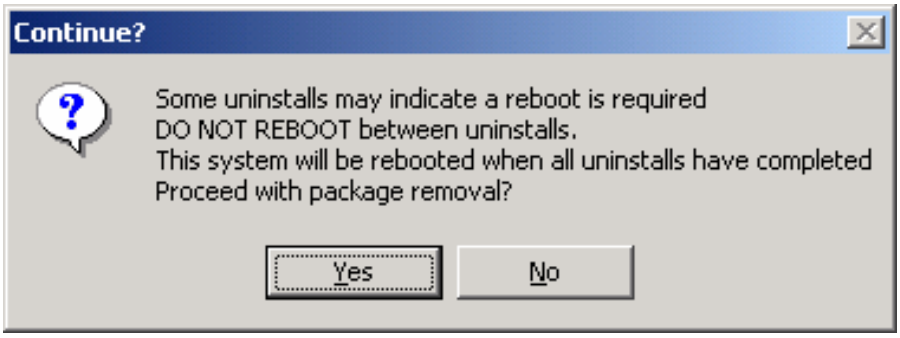
3. Insert the MPS 2.1 Software, Documentation and Update CD and run `PERIinstaller\setup.exe`.



4. Select **Uninstall** when the **Select Components** window appears.



5. The following window appears. Select **YES**.



6. After the system has rebooted, select **Add/Remove Programs** from the **Control Panel** menu to confirm that all PERI packages are removed.

BCM-IVR 2.1 Installation Procedures

The installation of the BCM-IVR 2.1 is a three-part process:

a. Installation of PeriProducer 3.00 and PeriStudio 2.20

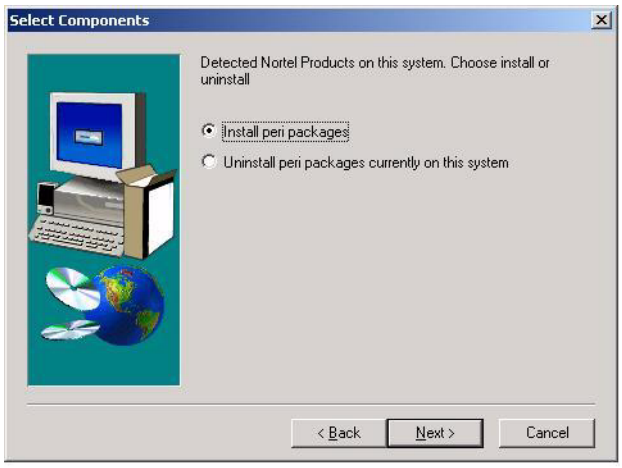
b. Installation of the BCM-IVR 2.1 Toolkit

c. Installation of the License

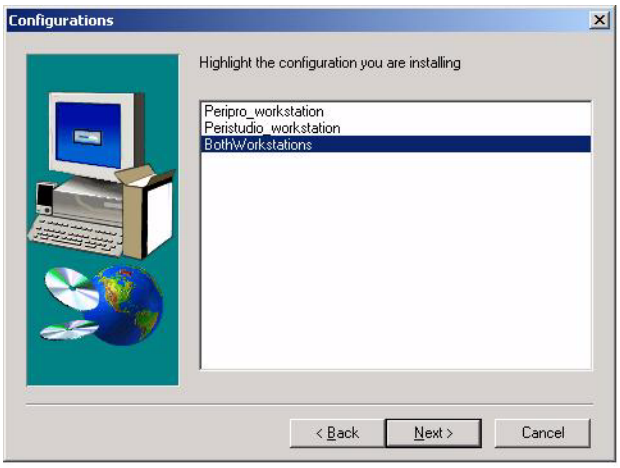
During these installation procedures, you may be prompted to reboot a number of times. As well, the system may reboot automatically after installing a number of packages.

Installing PeriProducer 3.00 and PeriStudio 2.20

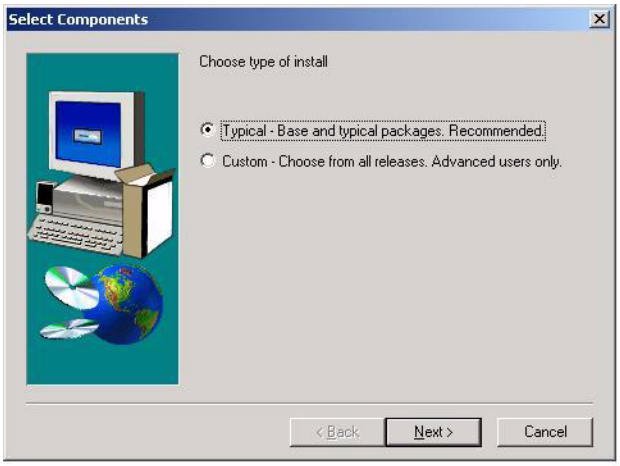
1. From the MPS 2.1 Software, Documentation and Update CD, run `PERIinstaller/setup.exe`.
2. Select **Install** when the **Select Components** window appears.



3. The **Configurations** window appears. Select the configuration you wish to install and click **Next.**

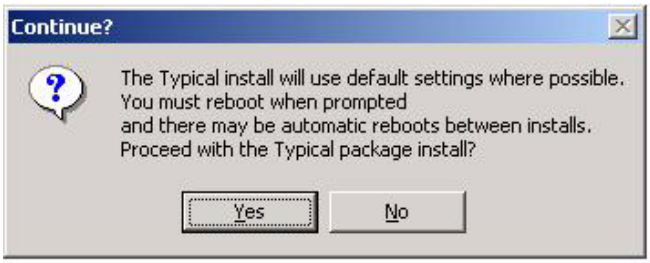


4. Select **Typical** when prompted to select the type of installation. Click **Next.**



Nortel highly recommends **Typical** installation. Only users with the most advanced understanding of BCM-IVR systems and PERI packages should attempt Custom installation.

After selecting **Typical Installation**, the following window appears.



Click **Yes.**

In a Typical Installation, the PERI packages install in the following order:

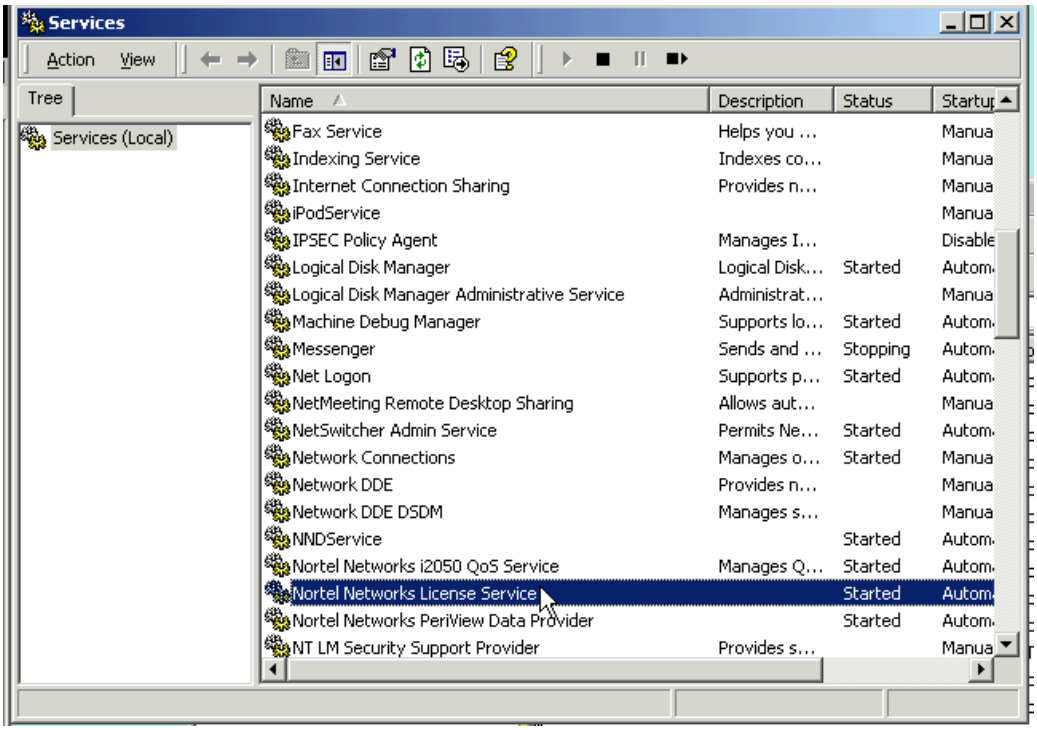
```
PERIperl > Auto Reboot > PERIfw > PERIglobl > PERIgrs >
PERIppro > PERIpstu > PERIplic > PERIrdb > Auto Reboot
```

5. From the *MPS 2.1 Software, Documentation and Update CD*, install any PERI patch or patch bundles (for example, `MPS2.1Patch_Bundle_9.exe`) in the Patch folder. If the patch or patch bundle installs successfully, the following message appears:

6. If the Windows Workstation is used as a statistics collector node (see *MPS 2.1 PeriReporter User Guide*), install any patches in the Patches > Collector folder on the *MPS 2.1 Software, Documentation, and Update CD*.
7. When all of the patch bundles (if any) have been successfully installed, open the **Services** window.

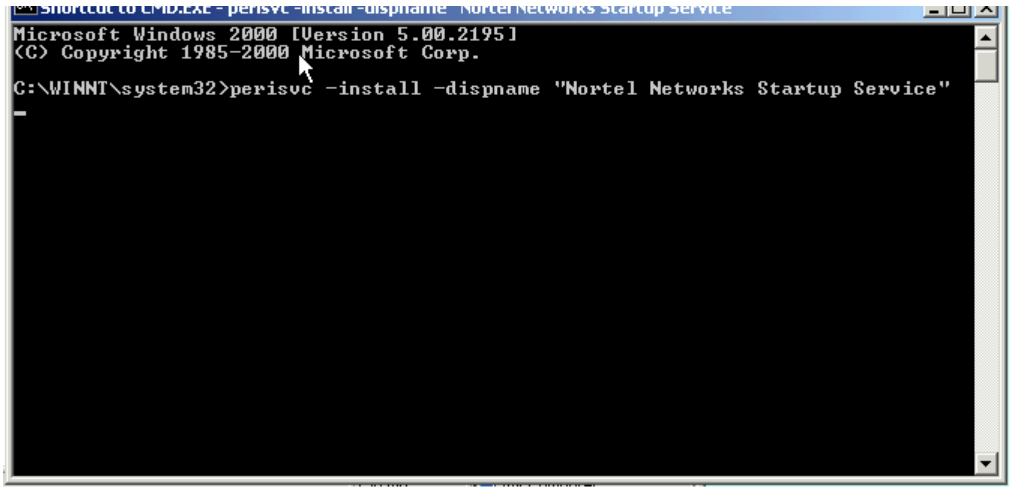
Note the presence of the Nortel Networks License Service and the PeriView Data Provider Service. The Nortel Networks Startup Service is not present.

You must manually install the Nortel Networks Startup Service.



8. Install the Nortel Startup Service by entering the following command:

perisvc -install -dispname "Nortel Networks Startup Service"



9. Confirm that srp is running by entering the following command:

srp -status

The preceding command produces an output similar to the following:

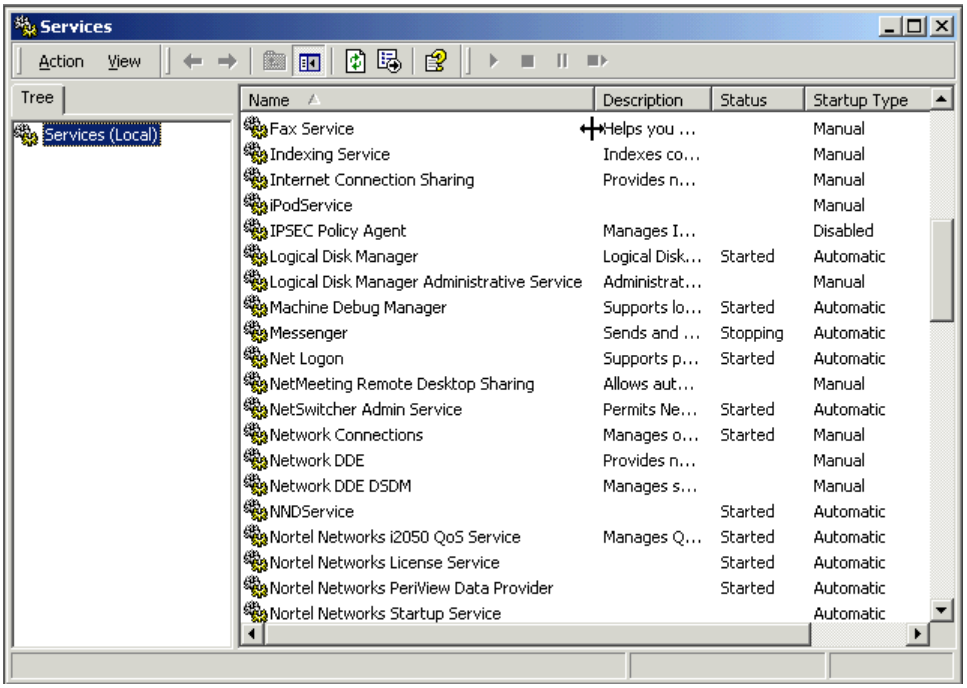
```
C:\WINNT\system32>vsh
vsh#common.0,gen/JVARGH-2 {1} -> srp -status
```

```
NODE:PORT     USER        PID      LINE STATE    ENTERED
STATE    FLAGS    CMDLINE

JVARGH-2:5999 SYSTEM        15900    -  RUNNING    Sep 15
15:52:40

   C srp
```

Confirm that Nortel Networks Startup Service is running by opening **Services.**



10. Ensure PERI packages are installed on the Windows workstation by running the following command:

`C:\>perl -S perirev.plx outfile=STDOUT`

```
C:\>perl -S perirev.plx outfile=STDOUT

 PERIase        5.0.0
                              MPS2.1Patch_Bundle_9 BundleCutDate-20050223
                              PkgCutDate-20020917

 PERIfw         1
                              MPS2.1Patch_Bundle_9 BundleCutDate-20050223
                              PkgCutDate-20011214

 PERIglobl      2.2.0
                              MPS2.1Patch_Bundle_9 BundleCutDate-20050223
                              PkgCutDate-20020917
```

```
C:\>perl -S perirev.plx outfile=STDOUT

 PERIgrs        2.2
                                MPS2.1Patch_Bundle_9 BundleCutDate-20050223
                                PkgCutDate-20030729

 PERIperl       1.0.1
                                MPS2.1Patch_Bundle_9 BundleCutDate-20050223
                                PkgCutDate-20020116

 PERIplic       1.2.0
                                MPS2.1Patch_Bundle_9 BundleCutDate-20050223
                                PkgCutDate-20030213

 PERIppro       3.00
                                MPS2.1Patch_Bundle_9 BundleCutDate-20050223
                                PkgCutDate-20021017

 PERIpstu       2.20
                                MPS2.1Patch_Bundle_9 BundleCutDate-20050223
                                PkgCutDate-20030220

 PERIrdb        2.0
                                MPS2.1Patch_Bundle_9 BundleCutDate-20050223
                                PkgCutDate-20030310
```

BCM-IVR 2.1 Toolkit Installation

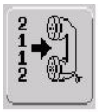
Introduction

When all the PERI packages for BCM-IVR 2.1 are successfully installed, you can install the BCM-IVR 2.1 Toolkit.

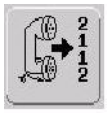
If you already had the BCM-IVR Toolkit installed prior to upgrading to BCM-IVR 2.1, Nortel recommends that you remove it prior to installing BCM-IVR 2.1 Toolkit. Previous versions of BCM-IVR Toolkit were not removed during the uninstall procedures described on page 40.

The BCM-IVR Toolkit is a graphical user interface (GUI) designed to allow applications to perform BCM platform-specific operations. The BCM-IVR Toolkit contains the feature extensions shown in the BCM-IVR Toolkit Feature Summaries table on page 49.

Table 1: BCM-IVR Toolkit Feature Summaries



Set Call Data: Associates data (for example, PIN, Credit Card Number, and so on) with a specific call. Up to five strings of data can be stored per call.



Get Call Data: Retrieves data that was previously stored using **Set Call Data**.

Park Call: Suspends a call so that another device on the BCM system can retrieve the call. A parked call is connected to either a silence audio stream or the Music On Hold input of the BCM until it is retrieved.

Check Park Status: Checks the status of a parked call in the system. The Check Park Status operation indicates whether a timeout has occurred, the call has been automatically unparked and returned to the application, or the caller has disconnected.

Begin Page: Attaches the voice port to a paging system. When combined with the Park function, BCM-IVR system parks a call and issues a page advising personnel of the call (and the code to retrieve it).

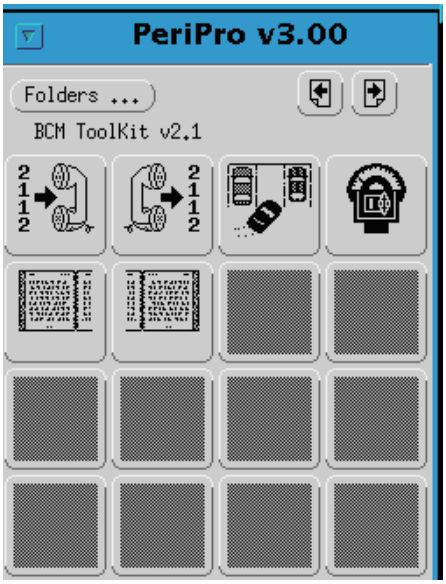
End Page: Disconnects the voice port from the paging system.

For more information about the functionality of the BCM-IVR Toolkit, see the *PeriProducer Toolkit for the BCM-IVR*

Installing the BCM-IVR Toolkit

1. On the *BCM-IVR Toolkit CD*, open **READ_1st.htm**.
2. Click the **BCM Toolkit** link to execute the toolkit installation.
3. Reboot the system.

The BCM-IVR Toolkit has six block functions.



License Service Installation

The following steps apply to users who are upgrading from IVR 1.X tools to IVR 2.1 tools (PeriProducer 2.1 and PeriStudio 2.1 to PeriProducer 3.00 and PeriStudio 2.20). Users who are installing IVR 2.1 for the first time should consult the *IVR Installation and Configuration Guide*.

1. Obtain the MAC address of the IVR workstation where the IVR development tools (for example, PeriStudio 2.20 and PeriProducer 3.00) reside by issuing the following command at the dos prompt:

```
c:\> plicnum
```

The **plicnum** command produces an output containing the MAC address of the workstation.The command output is similar to the following sample output:

```
Interface Address (Interface #0) --> 0:6:5b:da:51:3f
Interface Host Name --> BCMWKSTN-1
```

Record the MAC address shown in the `Interface Address` field.

2. Contact Nortel Technical Support at 1-800-4NORTEL. Select Option 5 > Option 1. Tell the Nortel Technical Support prime that you need to produce a BCM PeriProducer keycode or BCM PeriStudio keycode (license files). These files are necessary to enable License Service installation.You must provide the Nortel Technical Support prime with the following information:

   a. The MAC address of the workstation where the IVR development tools reside,

   b. The existing IVR 1.X license file that you backed up to a safe place (see instructions page 41). You must send the existing license file by email to the Nortel Technical Support prime, and

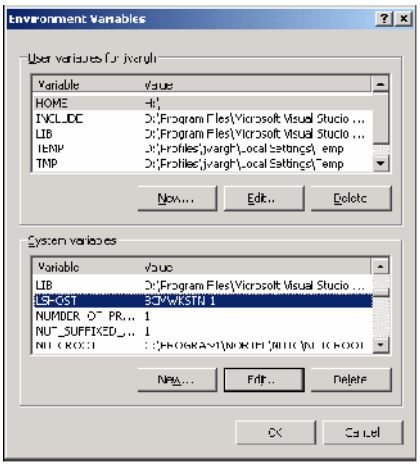
   c. The authorization numbers you received when you purchased the PeriProducer (NTAB4211) and PeriStudio (NTAB4210) tools.

The Nortel Technical Support prime will send you the necessary keycode for license service installation by email after receiving all the necessary information listed above (see **a**, **b** and **c**).

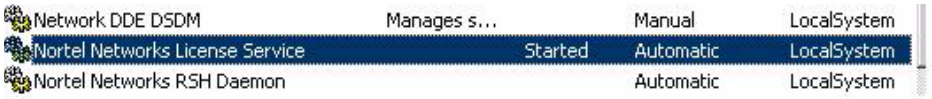
3. When you receive the keycode file, save it to:

   ```
   c:\Program Files\Nortel\PERIplic\etc
   ```

4. Select **Start > Settings > Control Panel > System.** Point the LSHOST System variable to the license server. In the following example, the local host is BCMWKSTN-1:



5. Select **Settings > Control Panel > Admin Tools > Services** and start the licensing service.



6. Confirm that the license server obtained the appropriate licenses and activated them on the workstation by entering the command:

   `C:\>plicmon <hostname>`

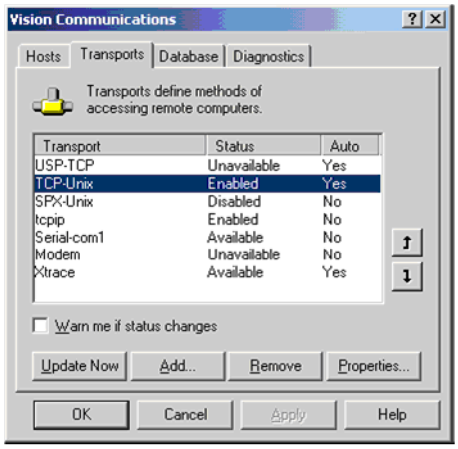
The preceding command produces an output similar to the following sample output from a workstation with hostname BCMWKSTN-1:

```
C:\>plicmon BCMWKSTN-1

Available Licenses from Server : BCMWKSTN-1

Product: PERIPRO 1.1
   Licensed to ethernet: 0:6:5b:da:51:3f
   Maximum users is: 355  Refresh every 360 seconds
Product: PERISTUDIO 1.3
   Licensed to ethernet: 0:6:5b:da:51:3f
   Maximum users is: 355  Refresh every 360 seconds
Product: plicd 1.2
   Licensed to ethernet: 0:6:5b:da:51:3f
   Maximum users is: 355  Refresh every 360 seconds
```

7. Select **Start > Settings > Control Panel > Vision Communications > Tranports** and confirm that `TCP-Unix` is enabled.



8. Restart the XVision server.
9. Go to **Start > Programs > Nortel** and launch the licensed package.

PeriView 2.1 and PeriView 2.1 Consolidator Installation

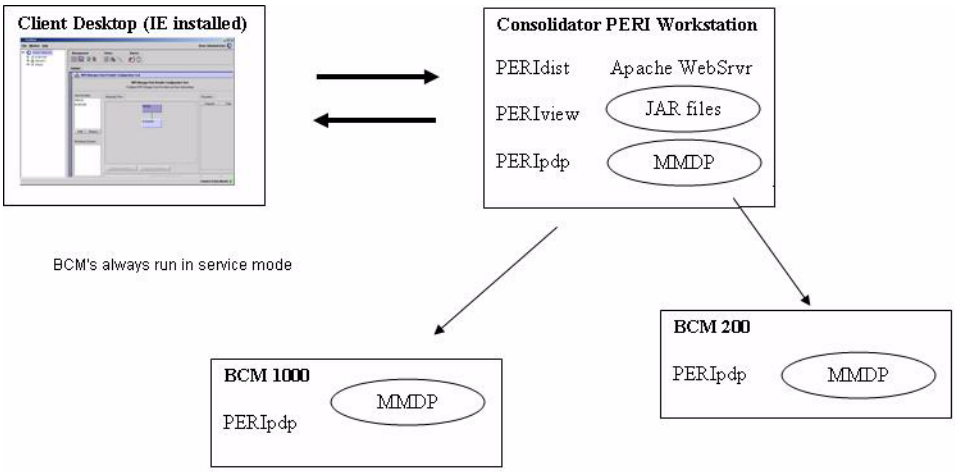
Overview

PeriView 2.1 is an integrated systems management application suite that provides full administration and control over BCM self-service platforms. It is used by BCM-IVR 2.1 System Administrators to manipulate and view network activity and to deploy and maintain applications in the network environment.

PeriView Consolidator is the communications hub for BCM-IVR system administration. The System Administrator remotely manages the BCM-IVR system by pointing any User PC web browser to the PeriView Consolidator workstation. The PeriView Consolidator workstation communicates with and collects data from the BCMs. The System Administrator also administers the BCM-IVR 2.1 system directly from the PeriView Consolidator workstation.

For additional information, see ***BCM-IVR 2.1 Configuration*** on page 18.

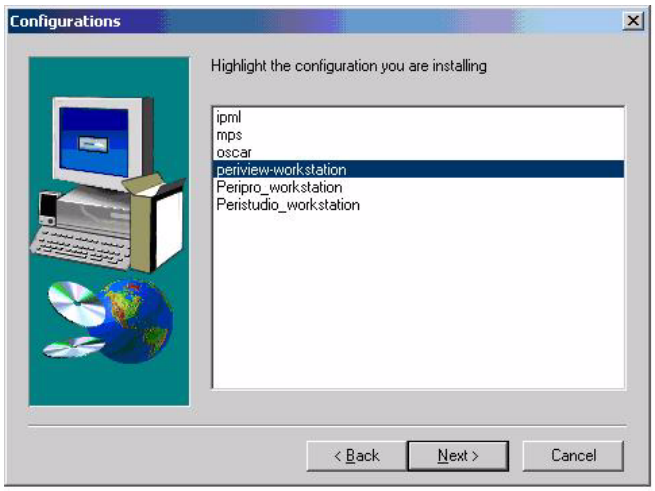
The PeriView Consolidator Workstation runs both the Apache Web Server and the MPS Manager Data Provider (MMDP). The PeriView Consolidator MMDP communicates with MMDPs running on the BCMs and collects information.



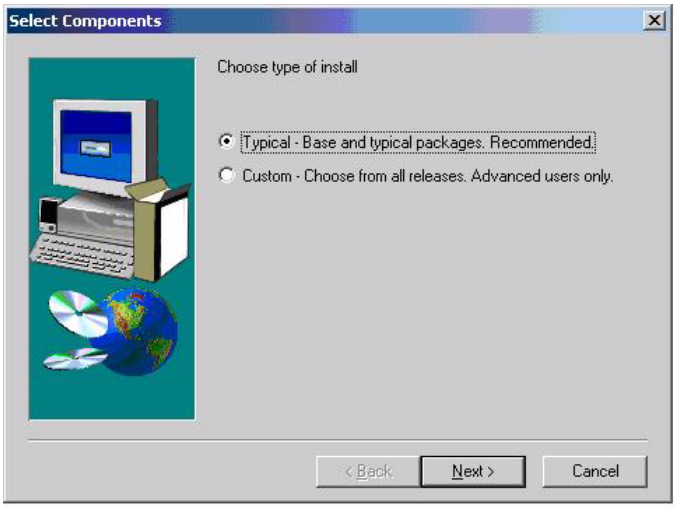
The BCM MMDPs always run in service mode. An MMDP process in service mode allows another, higher-level MMDP process such as PeriView Consolidator to establish a constant and persistent connection.

Installing BCM-IVR 2.1 PeriView Consolidator

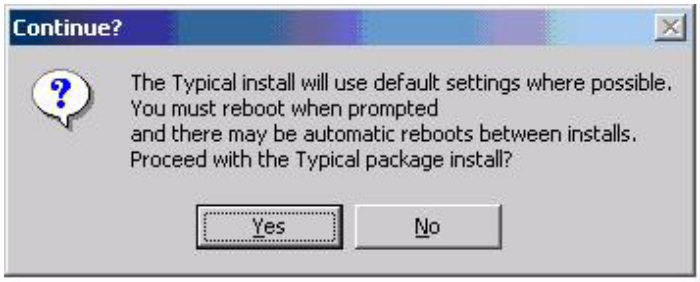
1. From MPS 2.1 Software, Documentation and Update CD, select **Preinstall** and install the JAVA runtime or SDK.
2. From the MPS 2.1 Software, Documentation and Update CD, select `PERIinstaller/setup.exe`.
3. Select **periview-workstation**.



4. When prompted to select an installation type, select **TYPICAL**.



When the following message appears, click **YES**.



During a Typical PeriView Consolidator installation, packages are installed in the following order:

```
PERIperl > Auto Reboot > PERIfw > PERIglobl > PERIgrs >
PERIppro > PERIpstu > PERIplic > PERIrdb > PERIpdp >
PeriView > Auto Reboot
```

If PeriView Consolidator is being installed on the BCM-IVR 2.1 Developer Workstation, only PERIpdp and PeriView need to be installed because the other packages were installed in the PeriProducer and PeriStudio upgrade steps (on page 43).

5. Select **Yes** to Apache Web Server installation during the PERIdist installation if Apache Web Server is not already installed on the PeriView Consolidator Workstation.

6. Select **Yes** when prompted to install web-based PeriView during the

PeriView installation.

You may be required to stop Microsoft Internet Information Server during the installation of web-based PeriView.

7. Install any PERI service patches on the MPS 2.1 Software, Documentation and Update CD (for example, MPS2.1Patch_Bundle_9.exe). When the following message appears, patches are successfully installed:

Click **OK.**

8. Confirm installation of PeriView and PERIpdp 2.1 from the command line by entering:

```
C:\>perl -S perirev.plx outfile=STDOUT
```

```
C:\>perl -S perirev.plx outfile=STDOUT
. . .
PERIpdp                         2.10
                                        MPS2.1Patch_Bundle_9  BundleCutDate=20050223
                                        PkgCutDate=20030623
PERIview                        2.10
                                        MPS2.1Patch_Bundle_9  BundleCutDate=20050223
                                        PkgCutDate=20021002
```

9. In `C:\Program Files\Nortel\PERIpdp\etc`, back up the userdb.xml file.

10. Copy the file `userdb.xml.BCM from the` BCM-IVR Toolkit CD

to overwrite

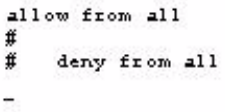
`C:\Program Files\Nortel\PERIpdp\etc\userdb.xml`.

The `userdb.xml.BCM` file contains the administrative plugins required for BCM-IVR management.

11. Restart Apache and PeriView Data Provider services. Ensure the PeriView Consolidator host name appears in `C:\Program Files\Nortel\PERIpdp\etc\mmdp.cfg`, as shown here:

12. If you are managing the BCM-IVR system from a browser located outside the local host, change permissions in

`C:\ProgramFiles\Nortel\PERIdist\apache\conf\httpd.conf`



13. From **Services,** restart Apache web browser.
14. Ensure PeriView Consolidator is running by pointing the Apache web browser to the PeriView URL:

http://<Consolidator IP>/periview/Periview.html

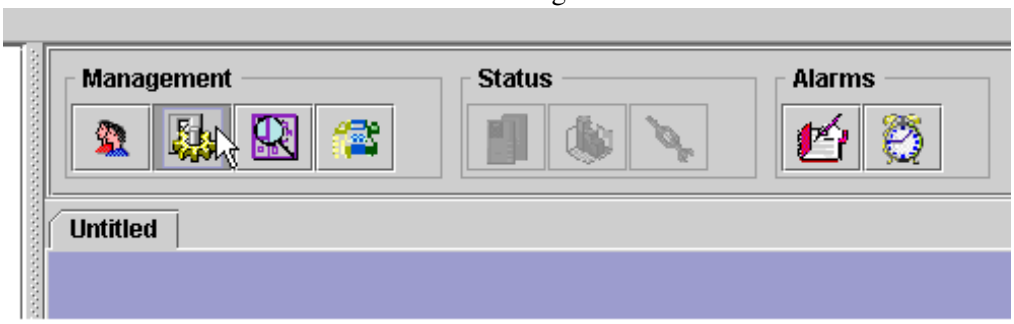
a. In the **UserID** box, enter Administrator.
b. In the **Password** box, enter root.
c. Check that the **Host** box contains the PeriView Consolidator IP address.

d. Check that the **Port** box contains “9191”.

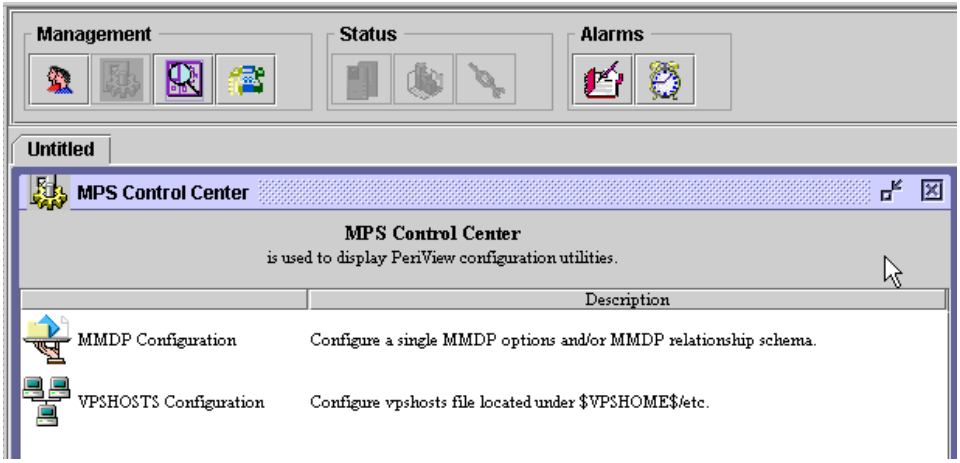
e. Click **OK** to log on.

You are now ready to add the BCM nodes to the system.

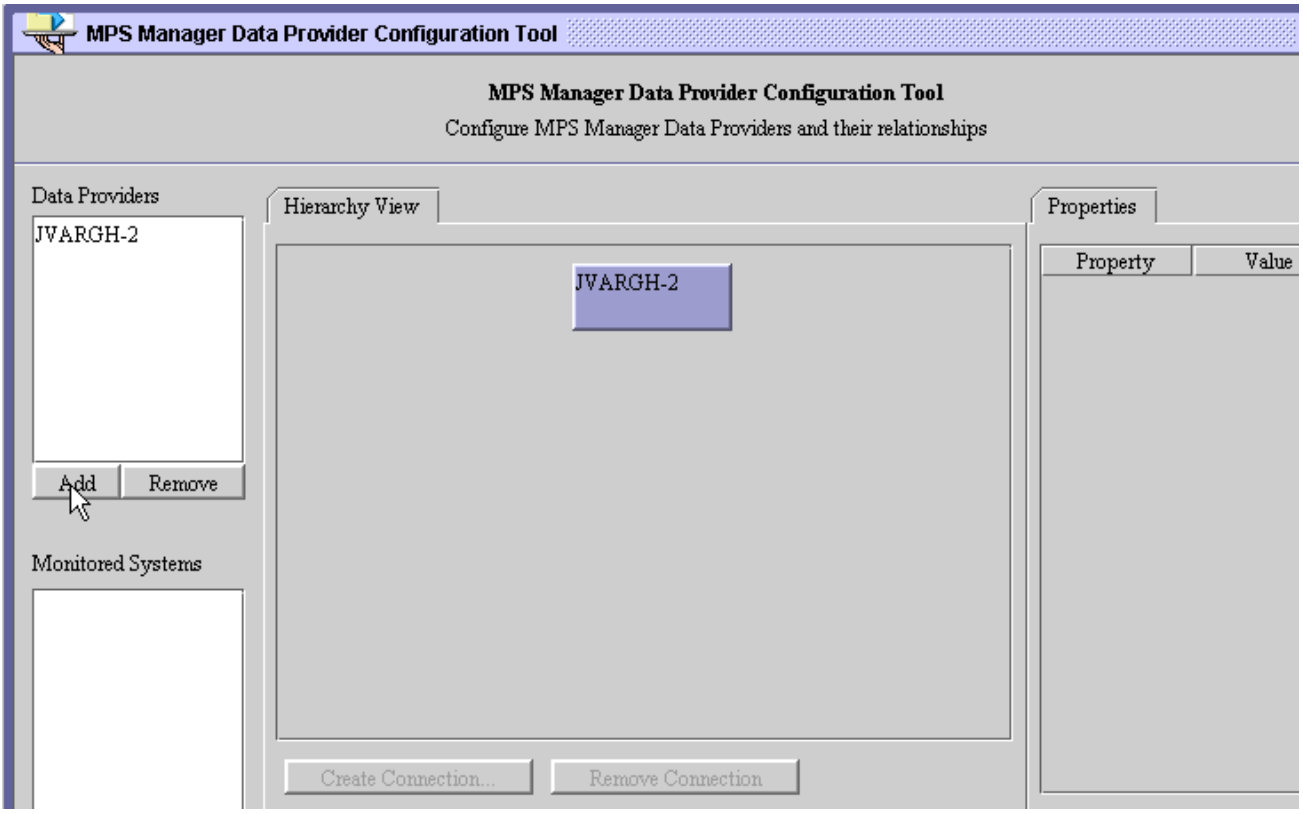
15. Click **CONTROL CENTER** on the Management toolbar.



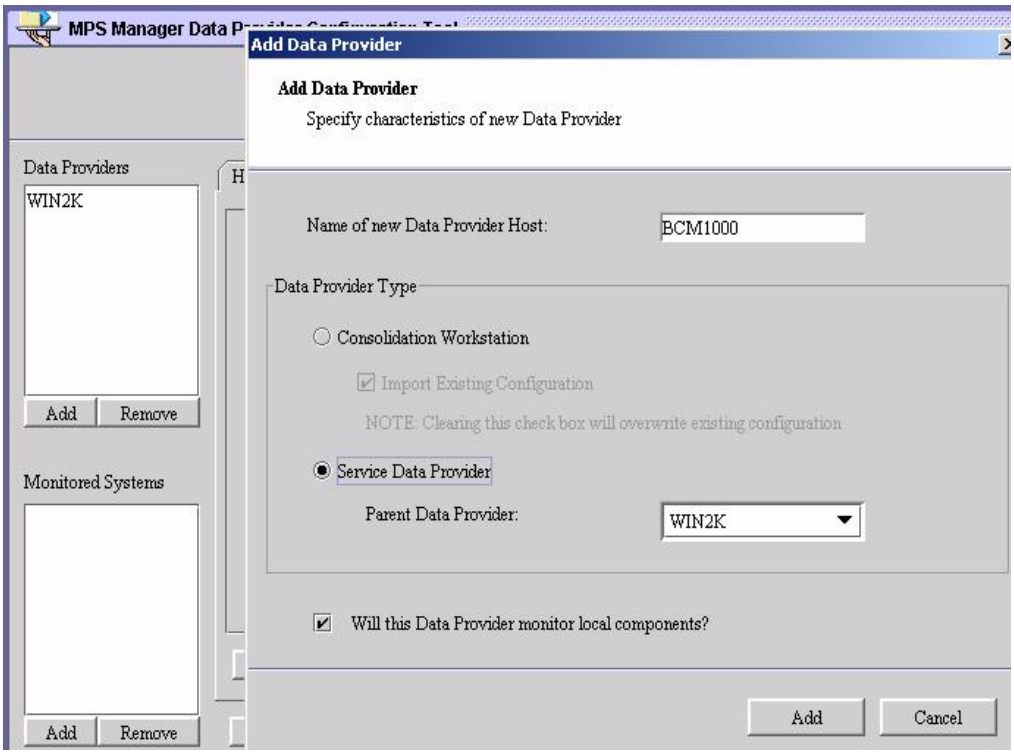
16. Select **MMDP Configuration**.



17. Click **Add** to add a data provider.



18. In the **Add Data Provider** dialog box, enter the host name of the new data provider (for example, BCM1000) in the **Data Provider Name** box.

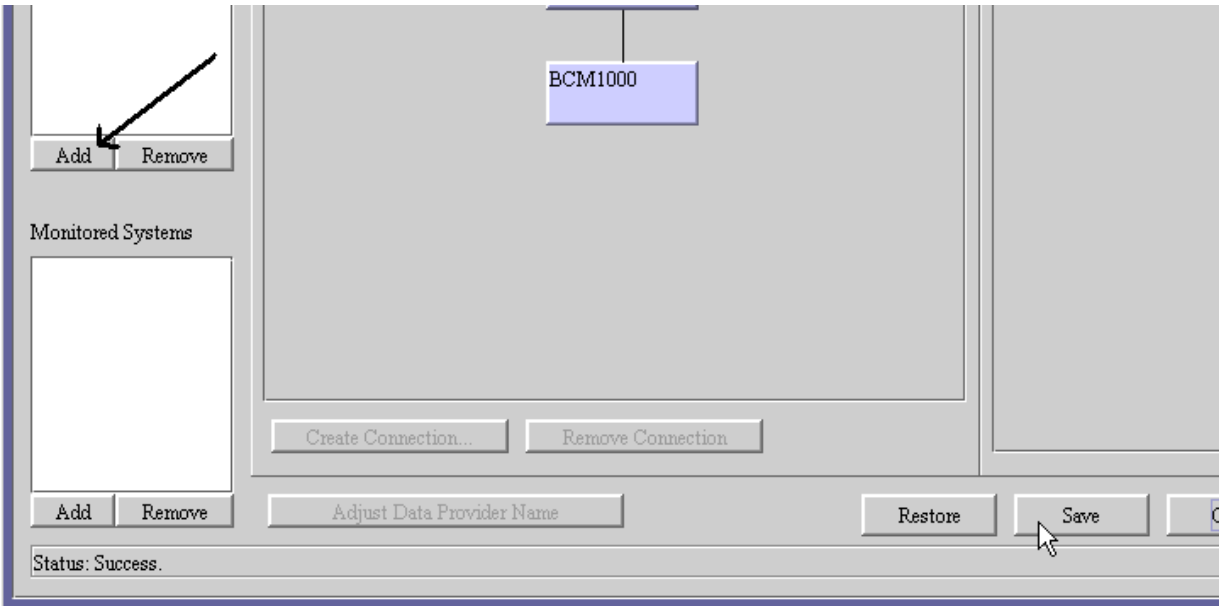


To ensure the Data Provider host name translates to its corresponding IP address, make a DNS entry or place an entry in the consolidator host file:

```
C:\winnt\system32\drivers\etc\hosts
```

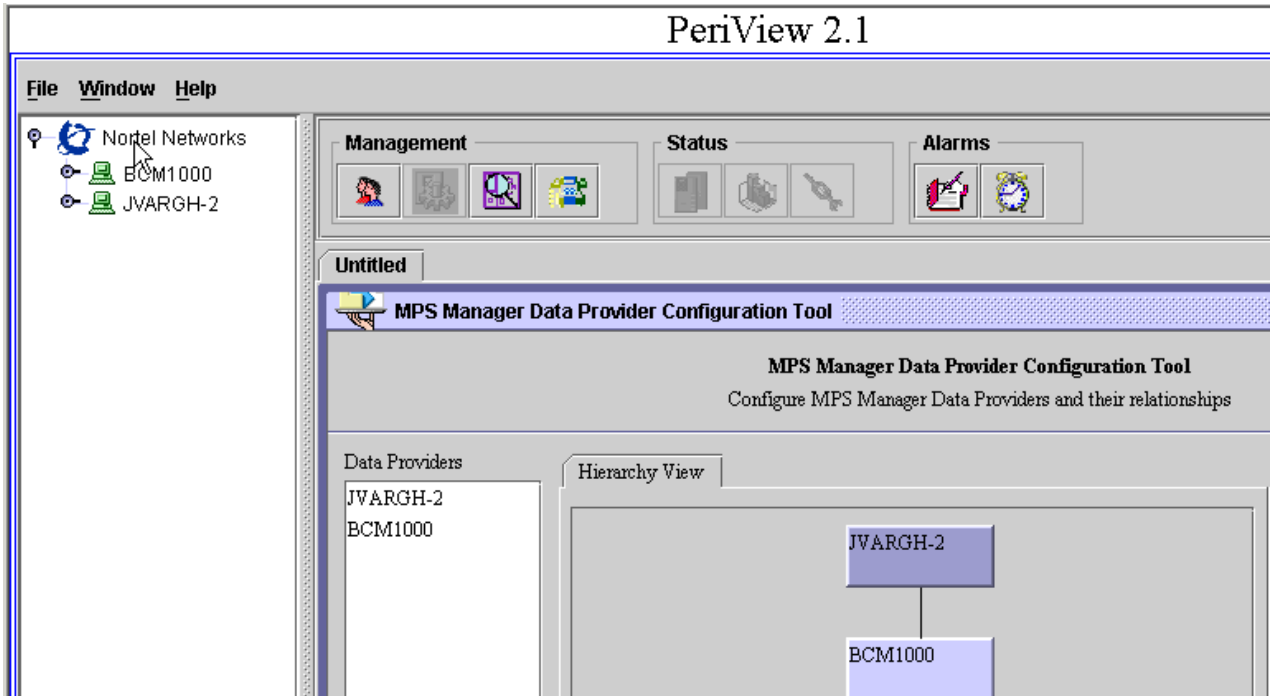
19. Select the BCM1000 as the Service Data Provider by selecting **Service Data Provider**. Select the PeriView Consolidator workstation as the Parent Data Provider.
20. At the bottom of the window, select the **Will the Data Provider monitor local components** checkbox. This triggers the BCM1000's MMDP process to connect to the local srp to get state information.
21. Click **Add**.

The **MPS Manager Data Provider Configuration Tool** window appears showing a hierarchy of two MMDPs. The PeriView Consolidator MMDP (i.e. Windows 2000 MMDP) appears above the BCM1000 MMDP, indicating that it is the parent service provider.



Select BCM1000 from the Data Providers list box in the upper left of the window or in the hierarchy. The BCM1000 is listed as a monitored system.

22. Click **SAVE**. If the information from the subsequent steps is entered correctly, the BCM1000 IP address and node are contacted. The icons representing the BCM-IVR Service Data Providers (i.e. BCM1000) turn green when a connection is established.



Launching Applications in PeriView

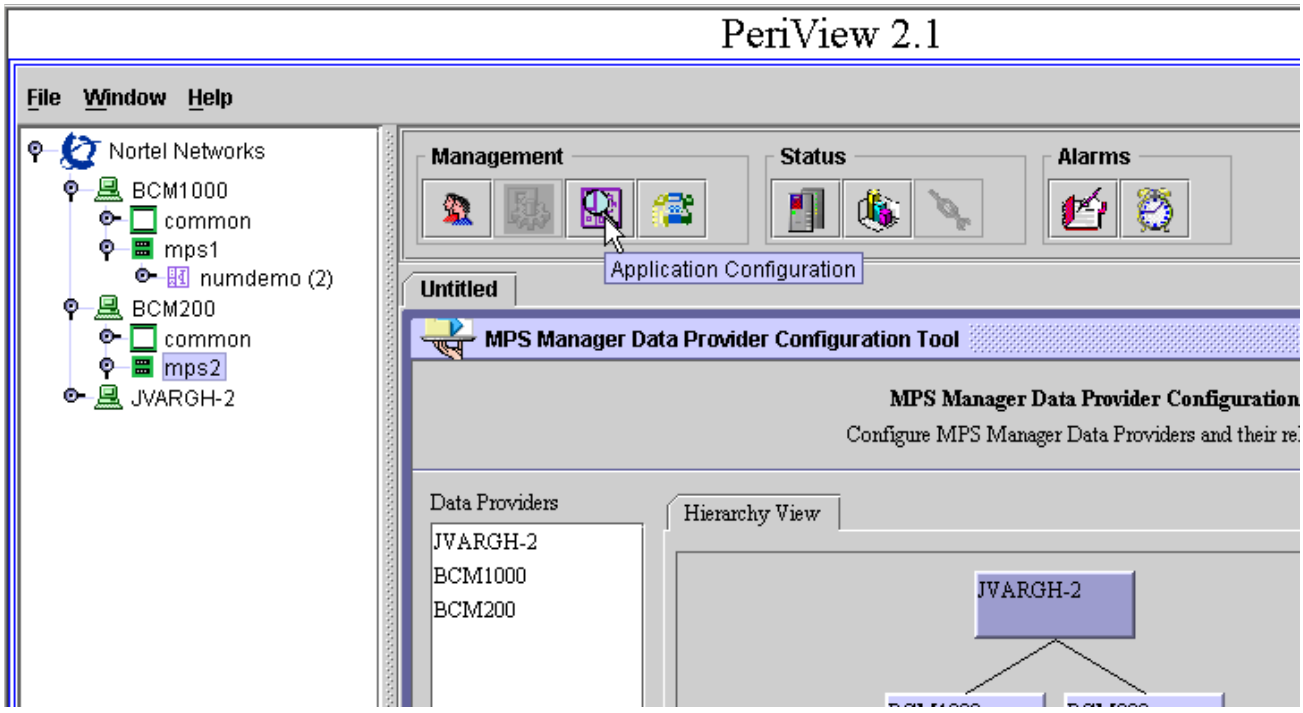
This section describes how to launch an IVR application from the user PC and send it to the BCM. The section includes the following procedures:

- loading application .vex files (***Loading Application .vex files*** on page 62)
- loading user-defined call function files (***Loading User Defined Call Function Files*** on page 65)
- assigning and starting applications (***Assigning and Starting Applications*** on page 66).

Loading Application .vex files

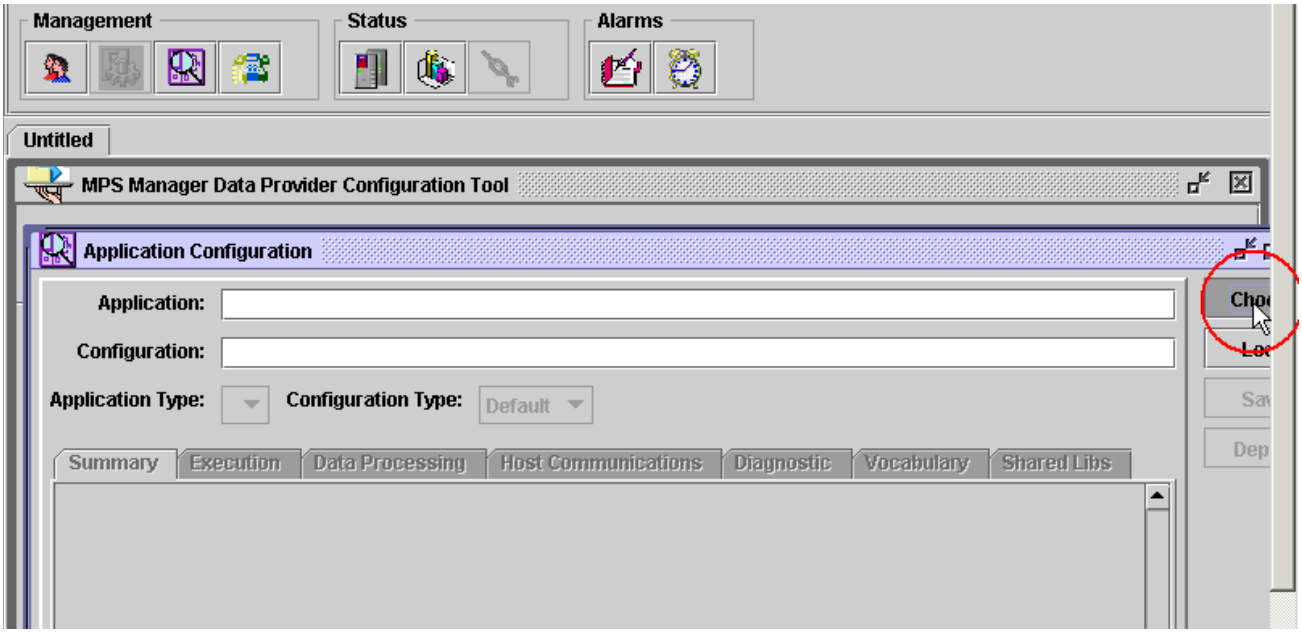
Prior to launching an application in PeriView, ensure that all system connections are established and running. All elements of the system (such as the BCMs and the Windows host workstation) that are running appear as green icons in the left area of the PeriView launch screen.

1. Ensure Windows host SRP is running using **Settings>Control Panel>Services Startup.**
2. Launch PeriView.
3. In the PeriView launch screen, click **Application Configuration** to start the IVR setup.

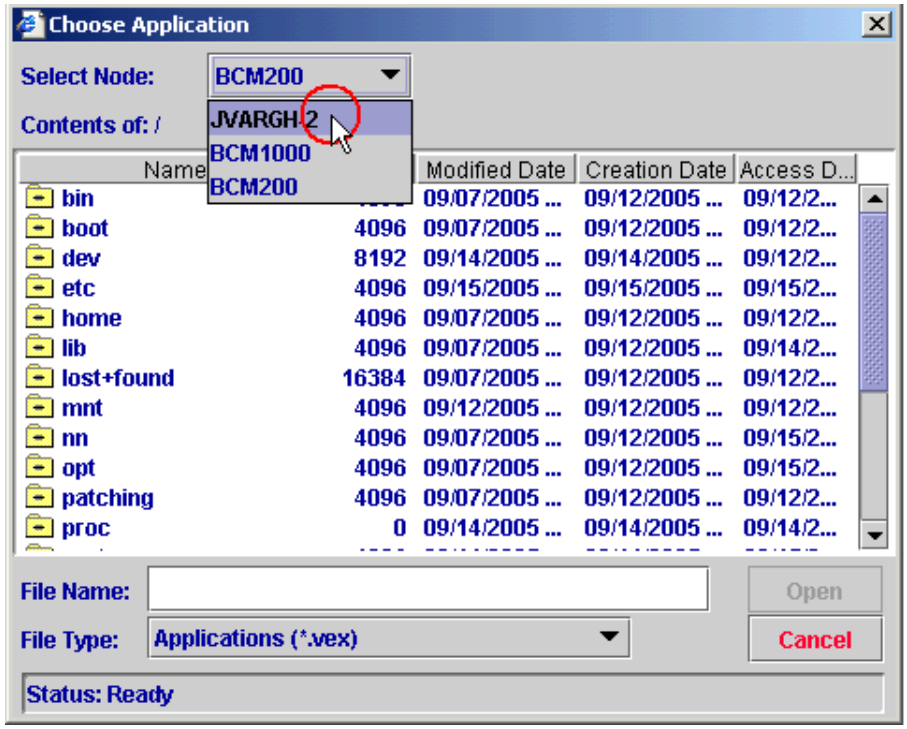


In the preceding fiugure, the Windows host workstation is JVARGH. The icon representing the host worktation JVARGH is green in the left area of the PeriView launch screen.

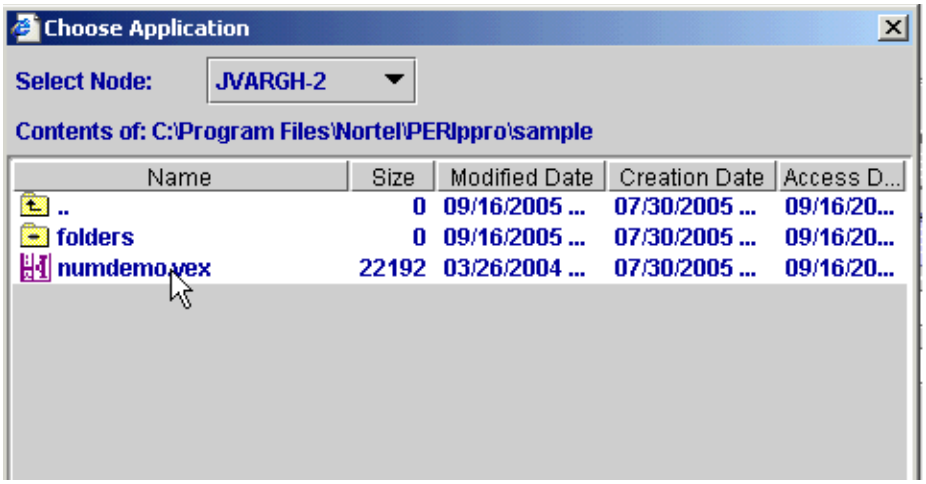
4. Click **Choose**. The **Choose Application** window appears showing folders on the selected node.



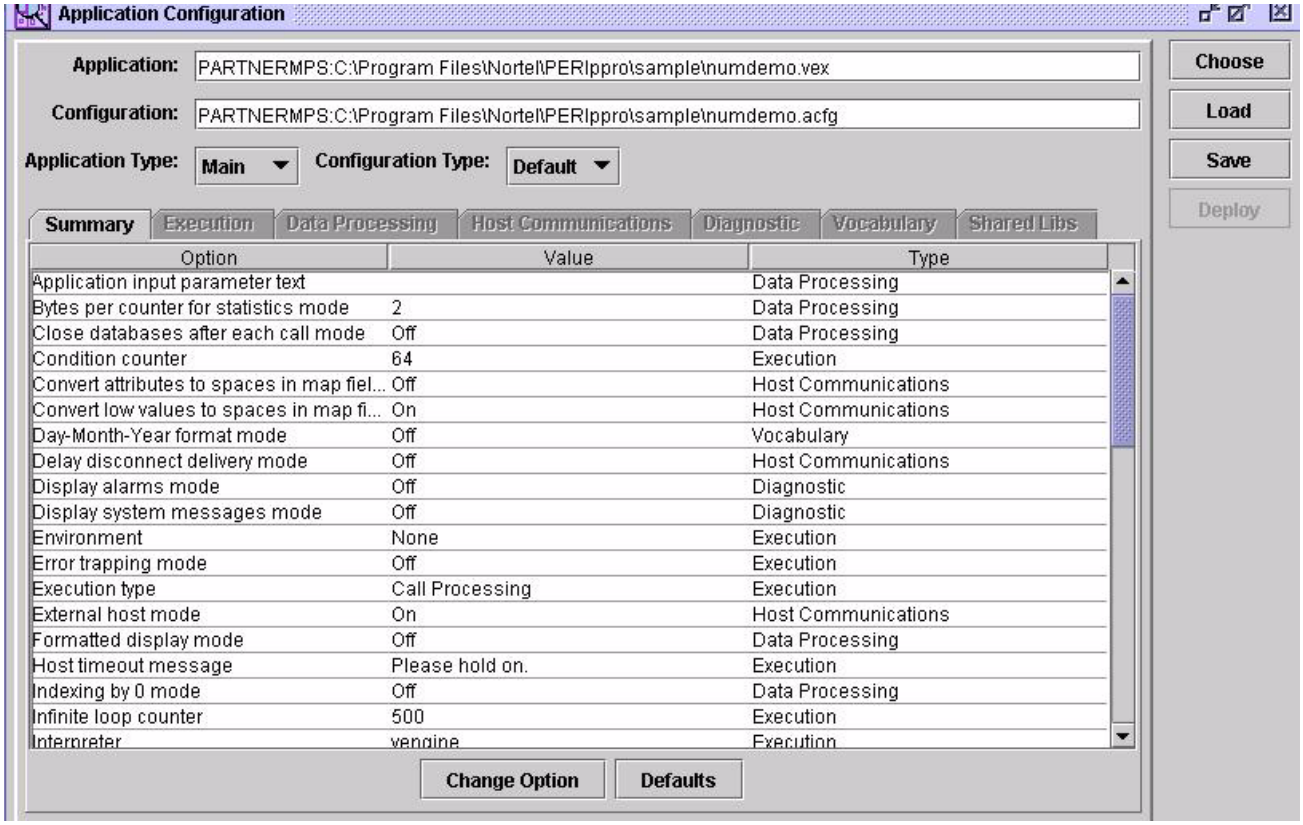
5. From the **Select Node** list, select the Windows host.



6. Browse the .vex folder. In the following figure, the .vex folder is located in `C:\Program Files\Nortel\PERIppro\sample` and contains only one application (`numdemo.vex`). Files with `.vex` extensions are the compiled output of PeriProducer source files.



7. Select the desired `.vex` file. Click **Load** then click **Save**.



Note that PeriView automatically creates the `.acfg` file when a `.vex` file is loaded to the **Application Configuration** utility.

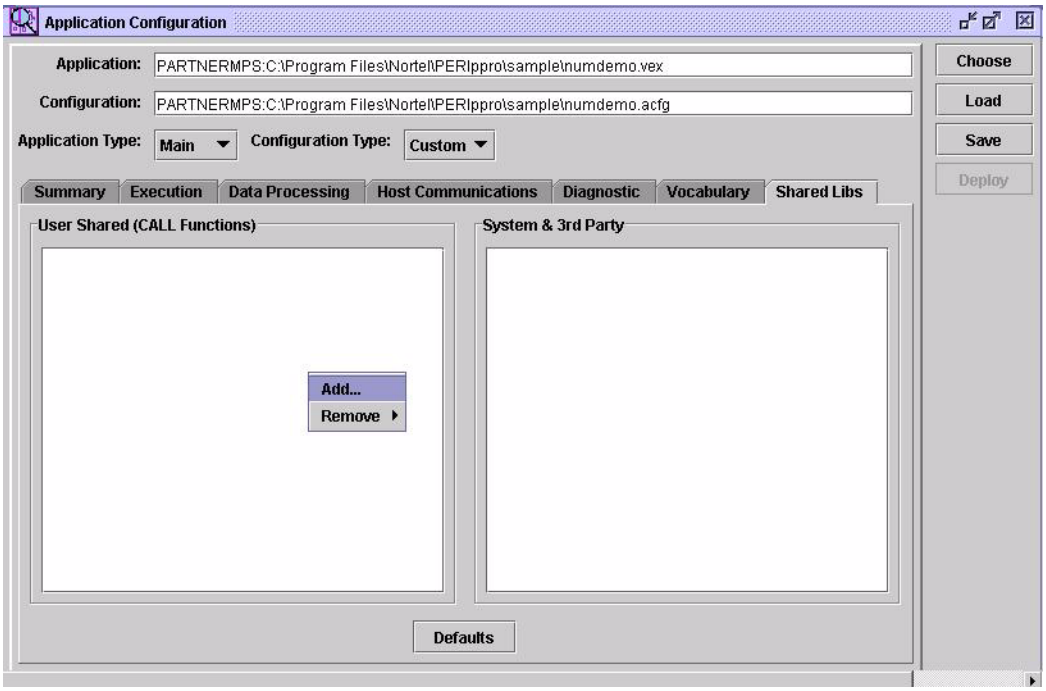
Note that you cannot have two MPS components with the same component number of the same network.

Loading User Defined Call Function Files

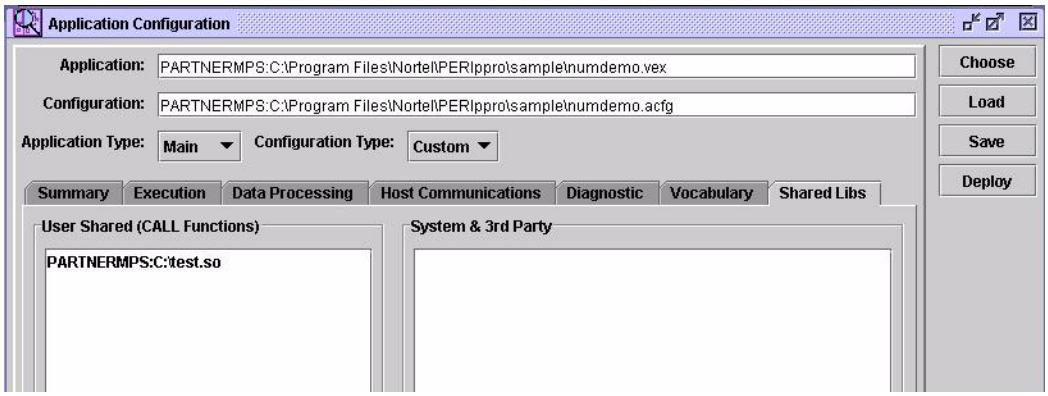
Code for User Defined Call Functions is compiled on a Fedora NCGL workstation. A .so file is generated and sent to the Windows host for transfer to the BCM. C/C++ Call Function files are those with `.so` extensions. See “Building C/C++ Call Functions Libraries” on page 89.

To deploy User Defined Call Functions (C/C++ Call Function files) to the BCM, click **Change Option** in the Application Configuration window.

Click **Add.** Browse the Windows host folder where `.so` files are located and select the desired `.so` file.



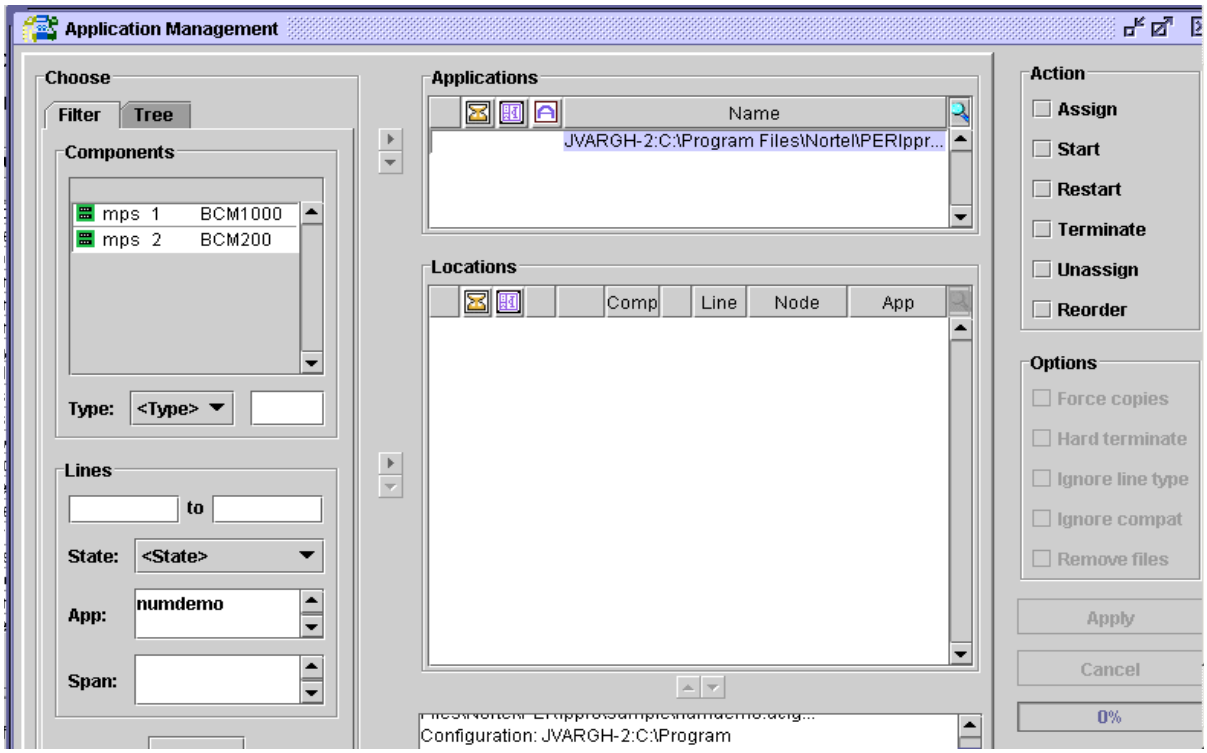
Click **Deploy** to assign the .so file to the BCM.



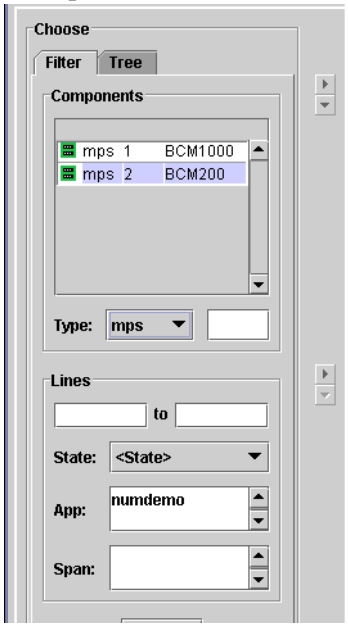
Assigning and Starting Applications

1. Return to the PeriView launch screen and click APPLICATION MANAGEMENT. The **Application Management** window appears.

In the **Choose** pane of the Application Management window, you can select the desired BCM nodes and line numbers

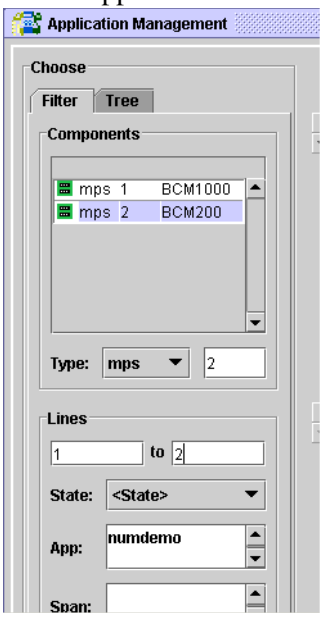


2. In the **Choose** field, select the **Filter** tab and select the desired BCM component from the Components list.



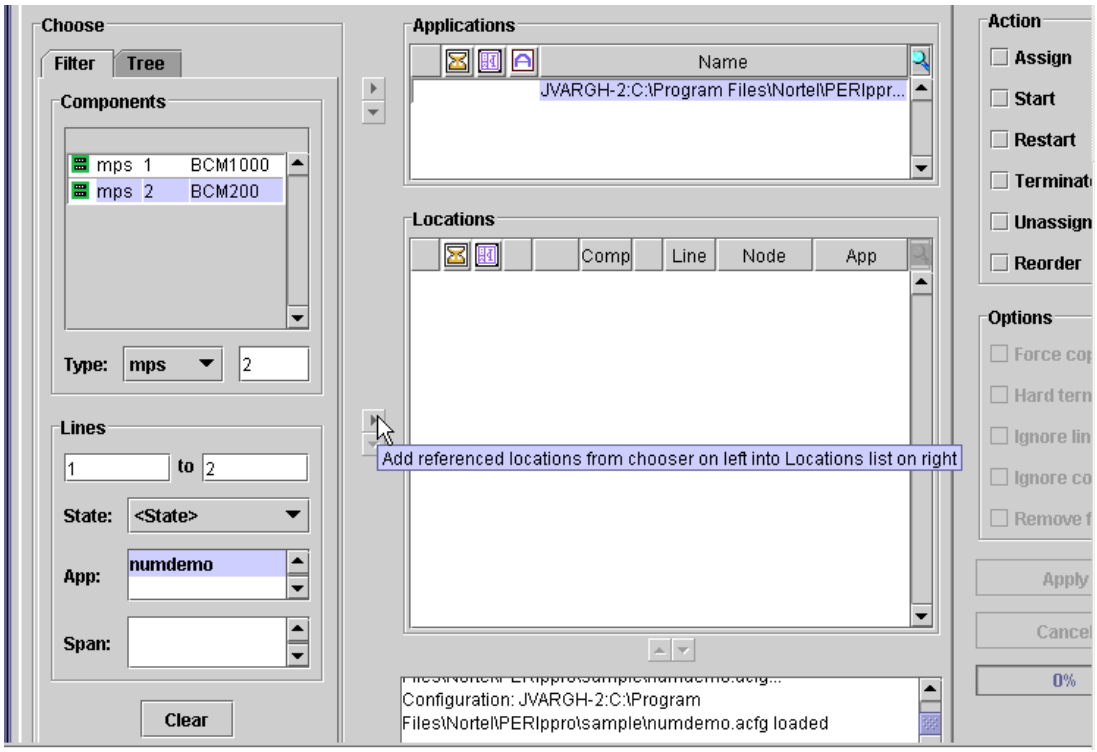
3. Enter the BCM component number in the **TYPE** box.

4. In the **LINES** boxes, select the lines where the IVR application runs. In the following example, the IVR application runs on lines 1 to 2:

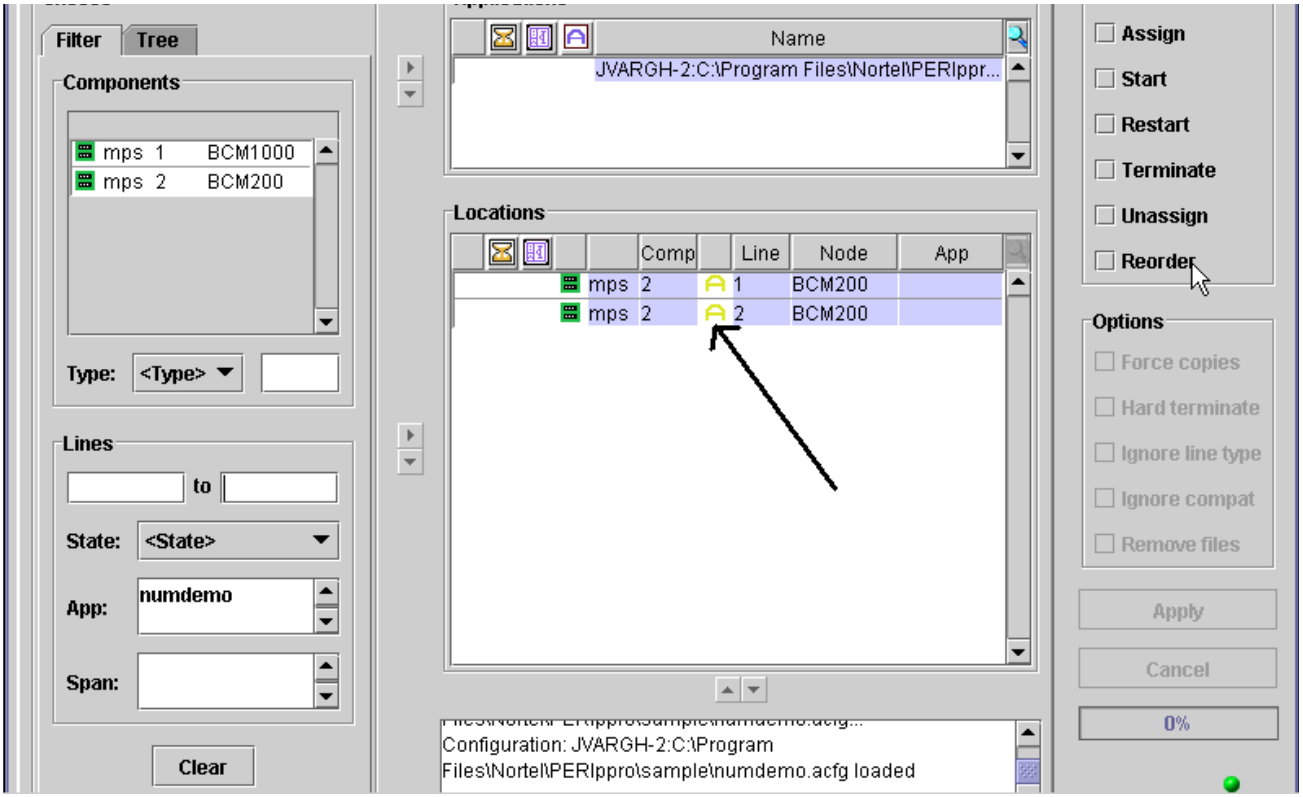


5. Select the application to be deployed to the BCM from the **APP** list.

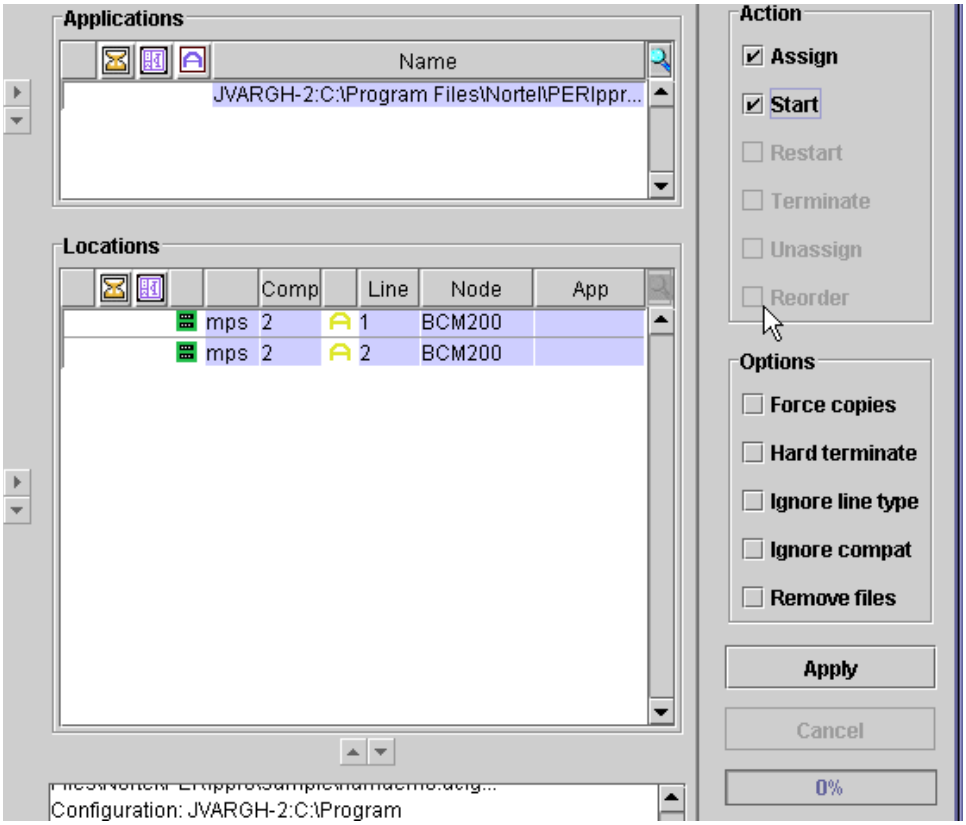
6. To enter the information in the **Choose** pane in the for a location listed in the **Locations** list, select the desired selection in the **Locations** list.



The application selected is represented by a Telephone icon in the **Locations** list. Note that the Telephone icon is yellow. This indicates that no applications are currently running on the selected BCMs.



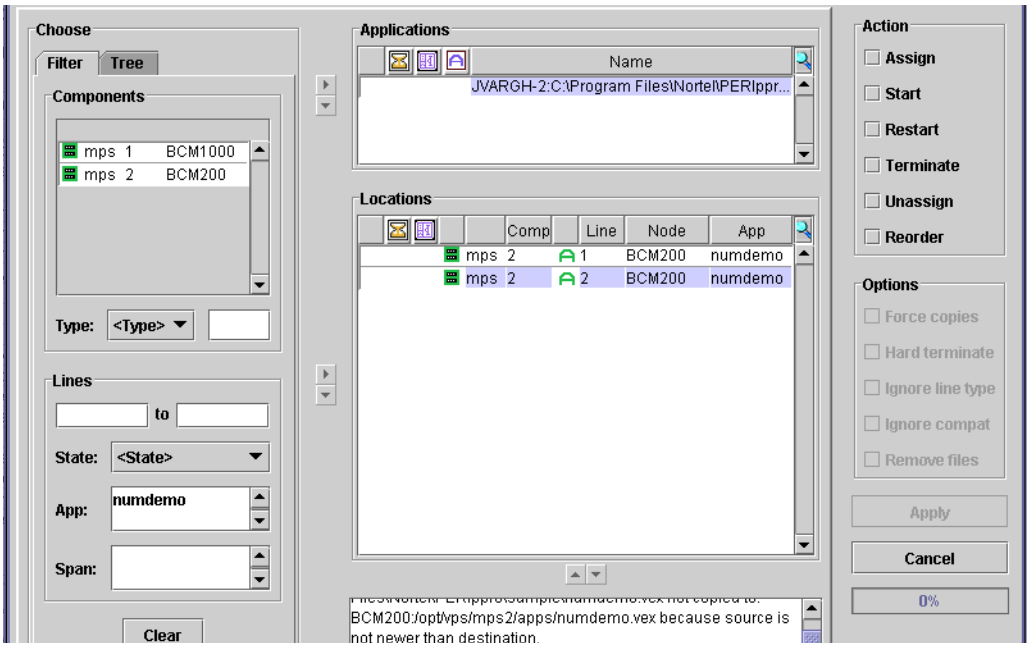
7. In the **Action** pane, select **Assign** and **Start** .



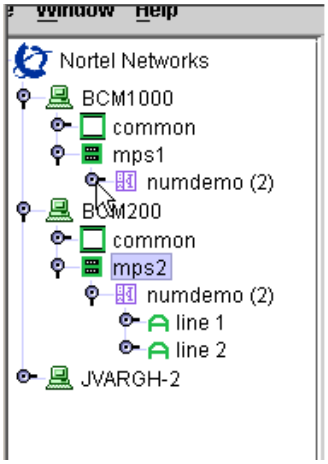
Note that the application Telephone icon is yellow, indicating that no application is currently running on the selected BCM ports.

8. Click **Apply** to activate the selected application to the desired BCM ports.

The application Telephone icon changes from yellow to green when the application is successfully assigned and started.



The PeriView launch screen shows the application running on two BCM ports.



To validate the IVR application, use any phone connected to your BCM system to call the IVR DN. If you do not know the IVR DN, proceed to step 9.

9. You can obtain the IVR DN by using the vsh command.

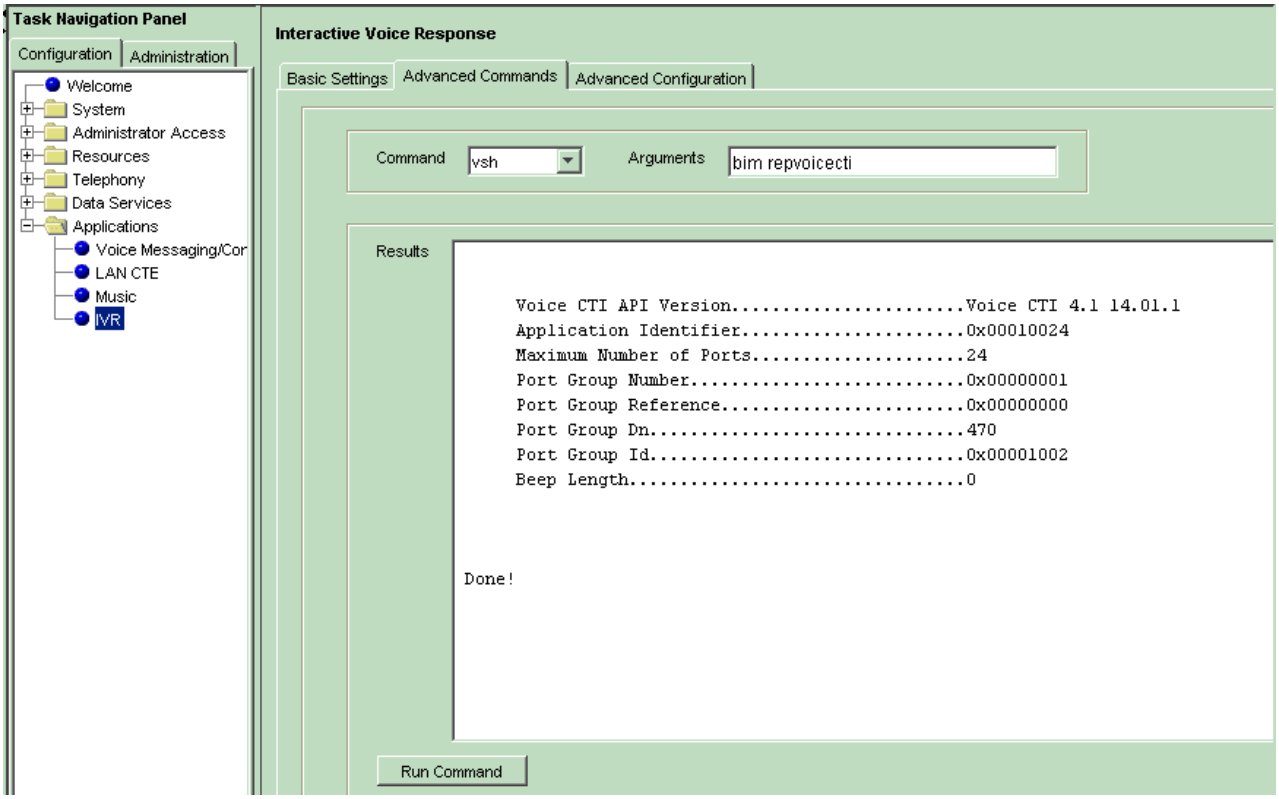
a. From the **Interactive Voice Response** panel, select the **Advanced Commands** tab. The **Advanced Commands** tab appears.

b. From the **Command** list, select the **vsh** command.

c. In the **Arguments** box, type the arguments you want to add to the **vsh** command (**bim repvoicecti**).

d. Click **Run Command**. The output appears in the Results panel.

The IVR DN appears in the Port Group DN line of the output.



When you obtain the IVR DN, validate the IVR application by using any phone connected to your BCM to call the IVR DN.

3

Administrator on the BCM 4.0 Platform

This chapter covers:

1. **Numbering Components using Element Manager**
2. **Enabling Host Communications with Element Manager**

Numbering components using Element Manager

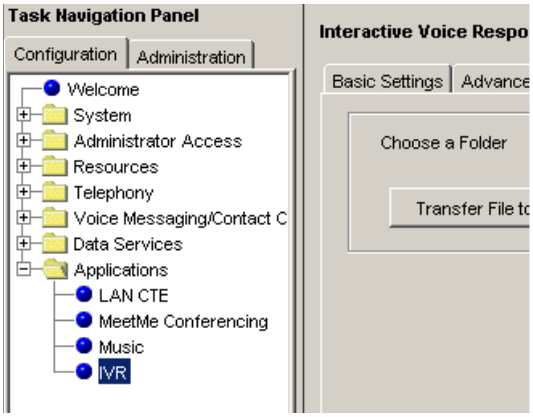
Element Manager is a management application for performing all day-to-day BCM administration, configuration and management functions. Element Manager resides on the System Administrator's Windows 2000 workstation.

Using Element Manager's graphical user interface, the System Administrator can easily configure and manage BCM nodes—whether from a PC directly connected to the BCM or over a LAN, internet, or dial-up connection (ISDN or analog).

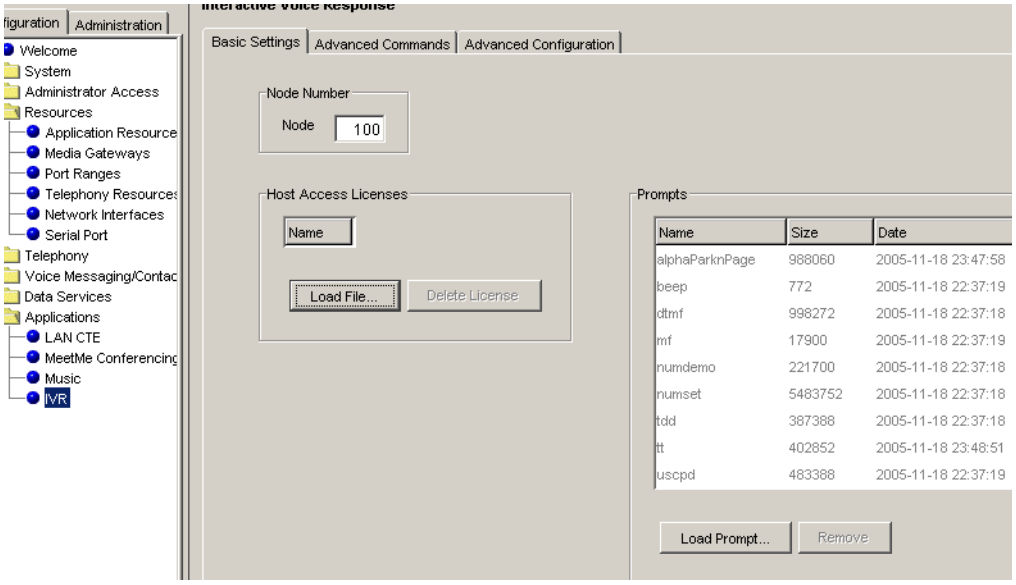
With Element Manager, all management tasks, including configuration changes, alarm monitoring, adding features with keycodes and managing backups, can be performed remotely.

In order to manage the BCMs using Element Manager, the BCMs must added to Element Manager's administration list.

1. Launch Element Manager.
2. In the **Task Navigation** pane, expand the **Applications** folder and select **IVR.**



3. The **Interactive Voice Response** window with three tabs appears. Select **Basic Settings**.



To administer many IVR systems on different BCMs, IVR systems must be assigned different node numbers. To change a node number, type in the new number and select the Tab key on your keyboard to exit from the box.

4. IVR service shuts down and restarts after a node number change.

Enabling Host Communications with Element Manager

The Nortel IVR Keycode files enable host access. You do not have access to IVR Host Access Service without loading the necessary Keycode files in Element Manager.

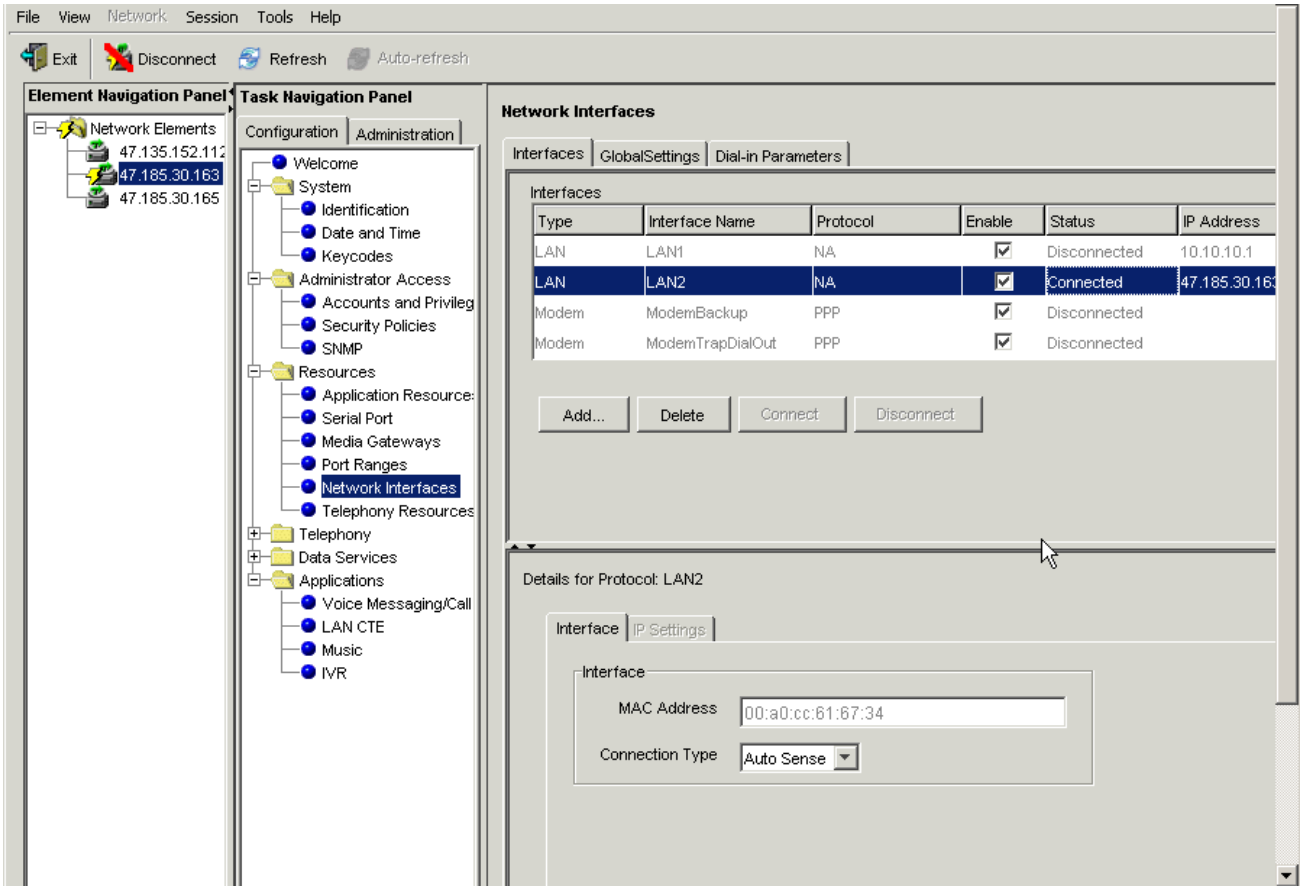
The keycode files (license files) for Host Access Licensing in BCM/IVR 2.1 are different from those in BCM/IVR 1.X.

Contact your Nortel Technical Support organization to obtain the new license file for host access.

Prior to contacting your Nortel Technical Support organization, obtain the MAC address for the BCM interface that communicates with the Host:

1. Launch Element Manager
2. In the **Task Navigation Panel**, click the **Configuration** tab.
3. Expand the **Resources** folder and click **Network Interfaces**.
4. Select the LAN interface you want to use to communicate with the external host (for example, LAN 1). The **Details for Protocol** appears with the **Interface** tab displayed

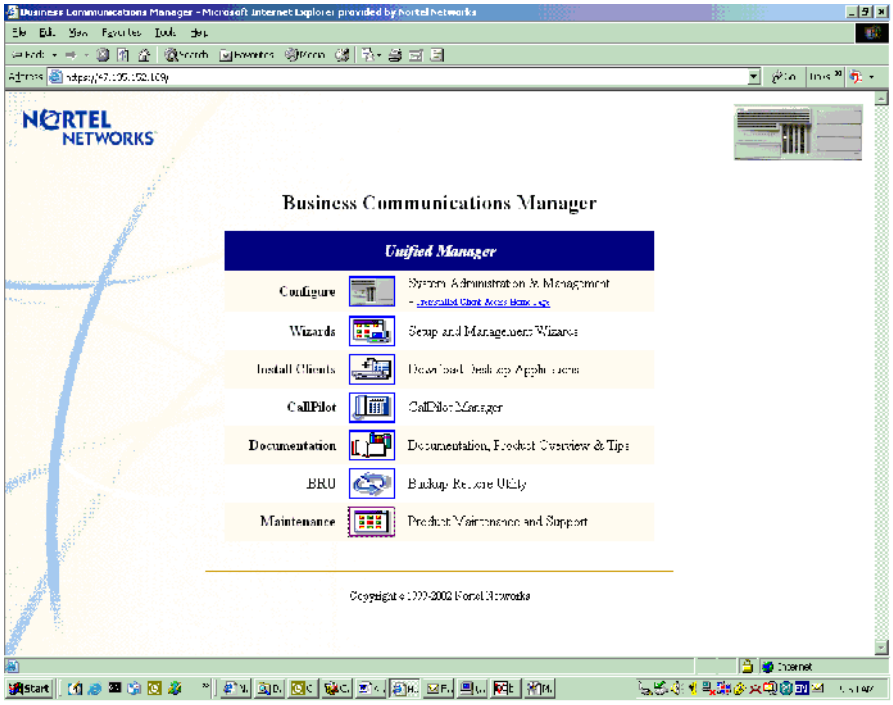
5. Record the information that appears in the **MAC Address** box. This is the MAC address of your BCM**.**



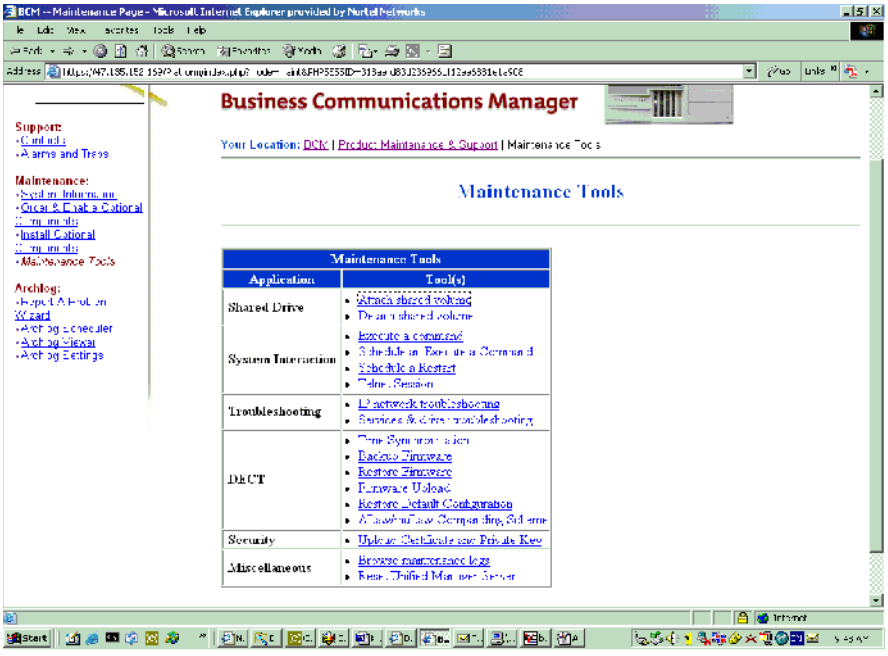
Retrieving existing Host Communications License File

1. Create a shared folder on the PC that will receive the Host Communications License File from the BCM.

2. Log on to Unified Manager on your BCM 3.X system.

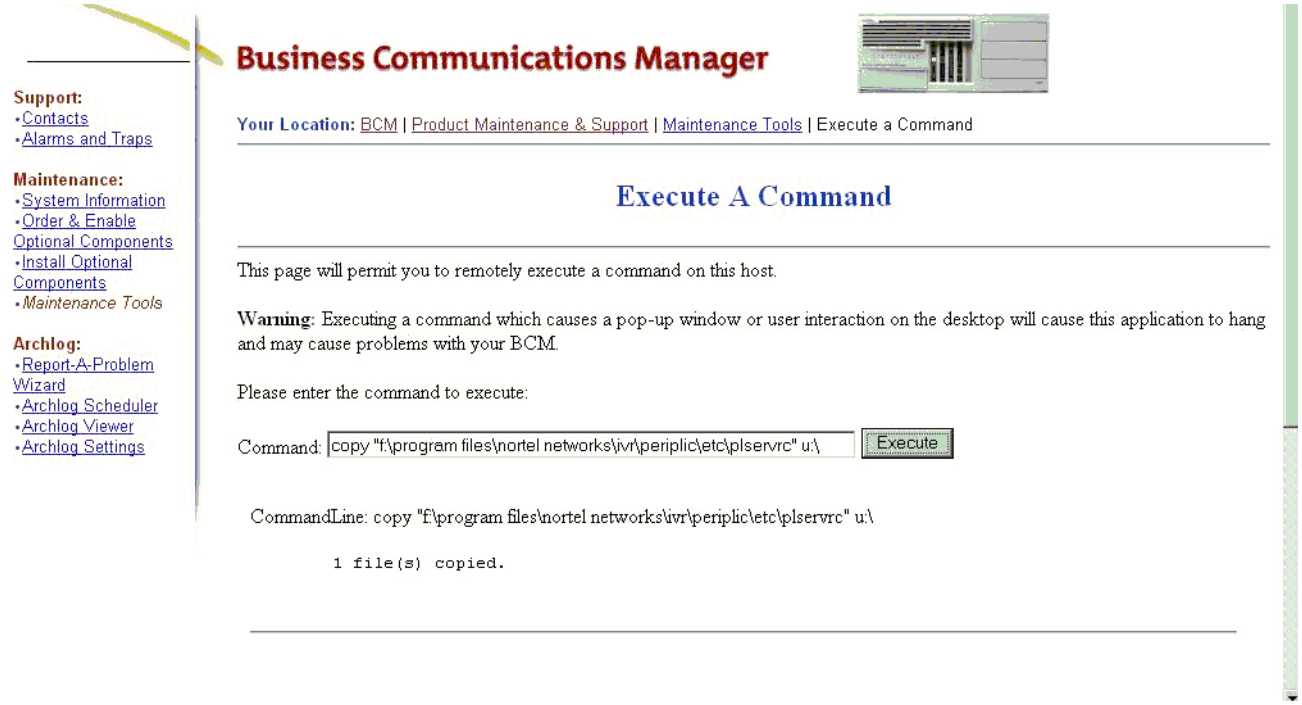


3. Click **Maintenance**.



4. Select **Attach Shared Volume.** Select the shared folder you created previously (see page 76) to be accessible by the BCM.

5. Return to the **Maintenance** page and select **Execute a Command**. Copy the Host Communications License File from the BCM to the shared folder that you previously created by entering the command in the **Command** box.



Getting and Applying the License File

Contact Nortel Technical Support (1-800-4Nortel). Select option 5 > option 1.

Tell the Nortel Technical Support prime that you need assistance in producing a keycode for BCM/IVR. When you are connected with a Level 2 Nortel Keycode Support Prime, tell the support prime that you need to produce a BCM Host Communications keycode (license file).

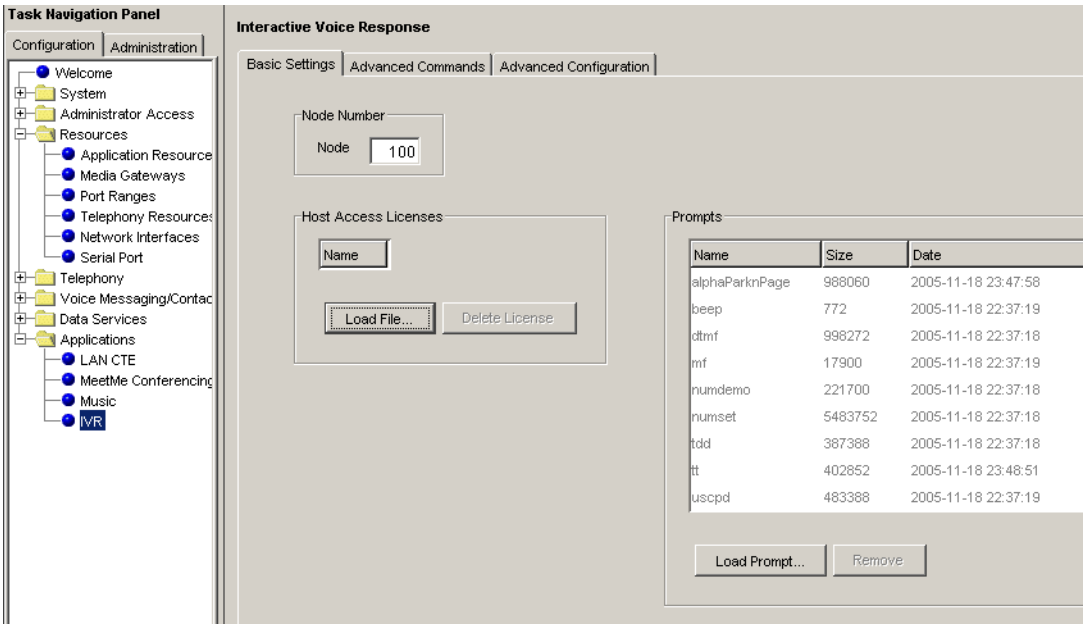
To receive the BCM Host Communications keycode, you must provide the Level 2 Nortel Keycode Support Prime with the following:

- the BCM MAC address
- the existing IVR 1.X license file (you must send an email with the existing license file attached to the Level 2 Nortel Keycode Support Prime)
- the Authorization numbers obtained from purchasing the PeriProducer (NTAB4211) and PeriStudio (NTAB4210).

When you receive an email containing the keycode from the Level 2 Nortel Technical Support Prime, you are ready to load the keycode to the Keycode directory in Element Manager.

1. Launch Element Manager.

2. In the **Task Navigation** panel, select the **Configuration** tab.
3. Expand the **Applications** folder and click **IVR.**
4. Enter the node number for the IVR.
5. Click **Load File** in the **Host Access Licenses** pane and load the keycode received from the Level 2 Nortel Technical Support Prime.



After the keycode is installed, the IVR service restarts automatically. You can now make IVR configuration changes, if any.

For IVR configuration changes, see the ***Interactive Voice Response Installation and Configuration Guide***.

For BCM configuration changes, see the ***BCM 4.0 Configuration And Installation Guide***.

Application Resources

For more information about Application Resources, including Service Manager, Keycode, IVR Advanced Commands, and the Advanced Commands Settings screen, see the ***Interactive Voice Response Installation and Configuration Guide***.

4

Developer Upgrade on Windows Workstation

This chapter covers:

1. **Porting PeriProducer 2.30 Applications to PeriProducer 3.00**
2. **Porting Events**
3. **Conversion Logs**
4. **Known Conversion Issues**
5. **Assign and Start PeriProducer 3.00 Applications**

Porting PeriProducer 2.30 Applications to PeriProducer 3.00

To upgrade to PERI products on the Windows Workstation, see ***Administrator on the Windows Workstation*** on page 39.

BCM 4.0 runs IVR applications that are developed with and use PeriProducer 3.00.

PeriProducer 3.00 supports legacy (PeriProducer 2.30) applications. The legacy applications are converted automatically when they are loaded into PeriProducer 3.00.

Application Porting Considerations

Consider the following when porting the legacy applications:

- Make a copy of the source file and port the copy.
- Back up the source file on another system, external media, or both.
- Save the ported copy as a different name (such as <original_name>300).

Converting Standard PeriProducer 2.30 Applications to PeriProducer 3.00

Applications that used the standard PeriProducer 2.30 are automatically converted by PeriProducer 3.00. No other setup or configuration procedures are required to convert the PeriProducer 2.30 legacy applications.

Load into PeriProducer 3.00

Load the PeriProducer 2.30 application into PeriProducer 3.00 as you would any other application. Conversion takes place automatically. The PeriProducer logo indicates that the application is changed and needs to be saved.

Using the PeriProducer Command Line to Port Applications

Use the following command line syntax to convert a legacy application:

```
peripro -c <application>
```

The preceding command converts the selected .ppr file to an executable .vex file.

For example, to convert numdemo.ppr, enter `peripro -c numdemo`. You can also use filename wildcards (e.g. `peripro -c num*`) to batch-convert applications. The previous example converts all applications in the current directory whose names start with num.

Porting Events

During application porting, the following events occur:

- Conditions and environment options are converted when possible. See “Other PeriProducer Changes” on page 25. See ***PeriProducer for the BCM*** for more information about BCM-specific changes to PeriProducer.
- Blocks are converted to their nearest possible counterparts in 3.00. See

"PeriProducer 3.00 Block Changes" on page 21. See ***PeriProducer for the BCM*** for more information about BCM-specific changes to PeriProducer.

- Resources are rendered obsolete. See ***PeriProducer for the BCM*** for more information about BCM-specific changes to PeriProducer.
- The original file is renamed by changing its extension to .p2x
- The PeriPro 2.30 Runtime Behavior is enabled **by default.** See the ***PeriProducer User's Guide*** for more information about the 2.30 Runtime Behavior option.
- A file with name `conversionlog_ <`*application*`>.txt` is created and contains messages pertaining to the conversion process. A similar file is created with the extension .html and is in HTML format.

Conversion Logs

The conversion logs are detailed lists of issues encountered during conversion of PeriProducer 2.30 applications to PeriProducer 3.00. The conversion logs are written to the same directory as the source (2.30) application. The logs are named `conversion_`*appname*`.txt` (in plain text format) and `conversion_`*appname*`.html`.

Each log entry indicates an application function that required some translation to become PeriProducer 3.00-compatible. A conversion log is divided into three categories:

1. **Information:** An information message indicates a conversion event that does not affect the functionality of the application. For example, an information message generates from the conversion of a 2.30 condition name to a new 3.00 condition name. The application containing the condition reacts the same way in PeriProducer 3.00; however, it uses a different condition name.
2. **Warning:** A warning message indicates that an application successfully converted but may not work as expected in 3.00. A typical warning message generates to indicate an obsoleted block setting that does not affect application function.
3. **Severe:** This category indicates something requiring manual application editing for the application to run under PeriProducer 3.00. Severe messages can include:
   - using features or resources no longer supported (see ***PeriProducer for the BCM*** for more information about features and resources that are not supported in the BCM environment)
   - obsolete environment settings, conditions, system datacards that do not have an equivalent in PeriProducer 3.00 (see "Discontinued Features and Functions" on page 24).

Known Conversion Issues

Set Resource Label in 2.30

PeriProducer 2.30 uses a Resource block Set operation to change the external resource (for example, OSCAR) label. PeriProducer 3.00 converts the Resource (Set) block to an Environment block that sets the RscLabel parameter and enables the Wait option.

If the Resource (set) block had the failure connector enabled, the Environment block has the failure connector enabled and connects to the same failure path as in the 2.30 application.

If the 2.30 application explicitly handled the `setfail` (or `setres`) condition for a Resource set (instead of using the failure connector), you must manually edit the converted application to explicitly handle the `envfail` (or `envcmp`) condition. The `setfail` (or `setres`) condition in 2.30 automatically converts to `ctrlrsrcfail` (or `ctrlrsrccmp`) in 3.00. If the resource label change fails in 3.00, the `envfail` condition occurs, not the `ctrlrsrcfail`.

Unsupported 2.30 Resources

Several resources from PeriProducer 2.30 are not supported in PeriProducer 3.00. (See “Unsupported Resources” on page 25.) When an unsupported resource is encountered during conversion, the unsupported resource is reported in the conversion log file. In the application, the resource is changed from the resource name to “Unsupported” in the associated Resource block. Depending on the resource type, you may not be able to use the application with PeriProducer 3.00.

Resource Block Conversions

If Wait is enabled or a failure connector is available on a 2.30 Resource block, Wait is enabled on the 3.00 converted block.

Flushing the Speak Prompt Buffer

The PeriProducer 2.30 System block Start Reprompt List function flushes the list of previously spoken output. This function is still supported in PeriProducer 3.00. However, Nortel recommends that to flush the output list buffer, use a Resource block with the Resource field set to Player, the CID field set to System.Default.CID, the Operation set to Control, and the Send From field set to System.Constants.Flush. This suggestion action appears in a 2.30 application’s conversion log file.

System Transfer Connection ID Datacard

PeriProducer 3.00 introduces the system datacard TransferCID. The system returns the Connection ID (CID) of the line that is used for a transfer operation back to the TransferCID datacard. TransferCID must **not** be used in PeriProducer 3.00-native applications to specify a CID for a transfer operation.

TransferCID is populated only if the transfer operation is performed synchronously (Originate block with Wait enabled). If Wait is not enabled, TransferCID stays empty.

During 2.30 to 3.00 conversions, PeriProducer may use TransferCID in this capacity (to specify a CID instead of receiving a value from the system). However, this is done only when converting applications.

Assign and Start PeriProducer 3.00 Applications

See “Launching Applications in PeriView” on page 62.

5

Developer Upgrade on Fedora Workstation

This chapter covers:

1. **Overview**
2. **Installing Fedora**
3. **Installing Nortel IVR Plugin Development Environment**
4. **Building C/C++ Call Functions Libraries**

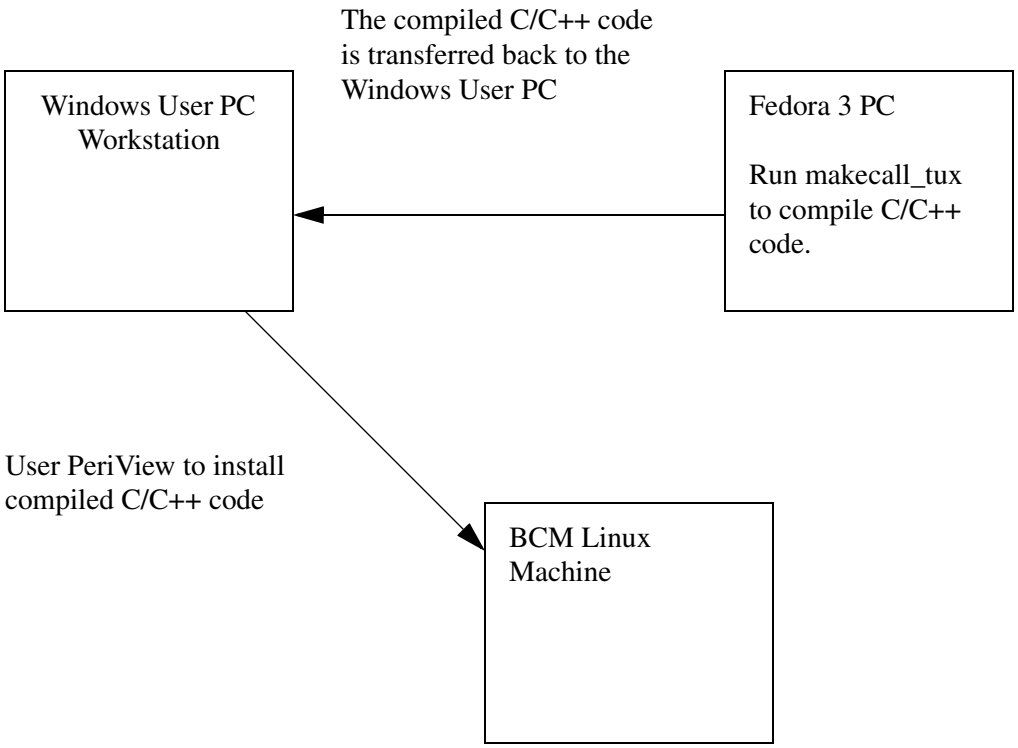
Overview

Some application developers create their own Call Functions using the C-language to supplement the base language constructs.

To run applications that use User Defined Call Functions, Call Functions must be compiled into shared libraries to be available to VENGINE at runtime. In the BCM/IVR 2.1 system, Call Functions must be compiled on a Fedora workstation using the `makecall` script. Compiled code is then transferred to the Windows workstation to run on the BCM.

For more information about User Defined Call Functions, see *User Defined Call Functions in the PeriProducer Environment.*

The following graphic shows the path to incorporating user-defined call functions in the BCM/IVR 2.1 system:



Installing Fedora

Fedora Core 3 is available for download at http://fedora.redhat.com.

Installing Nortel IVR Plugin Development Environment

Transfer the nortel.tgz file on the BCM/IVR Toolkit CD to the `/tmp` directory on the Fedora Core 3 machine.

Building C/C++ Call Functions Libraries

1. On the Fedora Core 3 machine, log on as `root` (or use `sudo`) and then change to the root directory: `cd /`
2. Extract the `nortel.tgz` file:

`tar xzf /tmp/nortel.tgz` (or **`sudo tar xzf /tmp/nortel.tgz`**)

3. Log on again as a regular user and access the IVR Plugin development environment in `/usr/local/nortel`.

A directory tree is available in `/usr/local/nortel/README`.

4. To build the example, go to the `/usr/local/nortel/examples` directory:

```
cd /usr/local/nortel/examples
```

`makecall_tux` Tool

The `makecall_tux` tool compiles C/C++ code into .so files that are transferred to the Windows workstation to run on Periview:

```
makecall_tux [-C libname.a] [-d] {failname[.c[pp]...}
```

The following options are available with the `makecall_tux` tool:

Option	Description
-C libname.a	Library name. Defaults to /usr/local/nortel/examples/lib/libcall.a
-d	Prepare to sue debugger dbx [tool]
-u	“ccopt”. C compiler options
-l	“ldopt”. ld link options

For help on using the `makecall_tux` tool, type:

`./makecall_tux`

```
Usage: makecall_tux [-C libname.a] [-d] {filename[.c[pp]]
...}
     -C libname.a       library name (default
/home/loucksv/lib/libcall.a)
     -d                 prepare to use debugger dbx[tool]
     -u '"ccopt"'       C compiler options
     -l '"ldopt"'       ld link options
```

5. To compile the sample, type:

   ```
   ./makecall_tux new-function.c
   ```

The output appears in the `/usr/local/nortel/examples/lib` directory.

6. To compile your own code, run the `makecall_tux` command with your own file name. For example:

The lib directory must exist before running `makecall_tux`.

6

Database Access Configuration

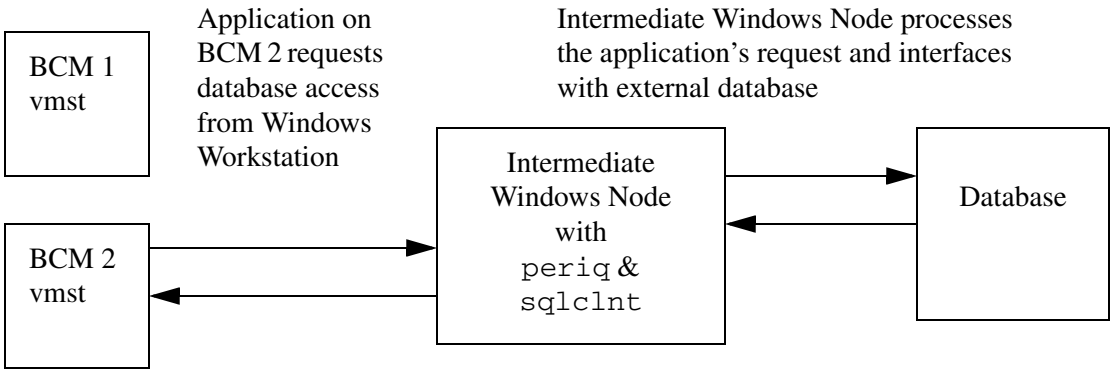
This chapter covers:

1. **Overview**
2. **Configuring periq on the Windows Node**
3. **Configuring sqlclnt on the Windows Node**

Overview

Some applications require access to external databases. BCM-IVR 2.1 supports Host database access and VTCPD. The system is configured so that database requests from applications running on BCMs are relayed to an intermediate Windows node where `periq` and `sqlclnt` are running. The Windows node retrieves the information and relays it back to the application running on the BCM.

The following graphic shows the interaction between the application on the BCM, the intermediate Windows node, and the external database.



To configure the BCM-IVR 2.1 system for database access, `periq` and `sqlclnt` must run on the Windows node. Both `periq` and `sqlclnt` are installed as components of `perirdb` in a TYPICAL installation on the Windows workstation (see ***Administrator on the Windows Workstation*** on page 39.) The Windows workstation can serve as the intermediate Windows node.

To run the database access configuration, additional components are needed from MPS 2.1 Patch Bundle 9 and additional database patches on the *MPS 2.1 Software, Documentation and Update CD.*

VMST 3 on the BCM Node

Ensure `vmst` is running on the BCM node where the applications requiring database access are running. The following command produces an output showing the list of active vmst ports and the attached BCM components:

[root@BCM1000 root]#vvpsactive

```
[root@BCM1000 root]# vvpsactive
Dec  6 21:55:33
Service(Port)     PID       Component(number)      Flags
================================================================
vmst(1)        26437       BCM1000.2 (#2)
Connected:  vastimer(66)

vastimer(66)    26224
Connected:  vms(1)
```

Install Patches on the Windows Node

To configure remote database access, you must install all the patches found in the Patches Remote Database folder on the MPS 2.1 Software, Documentation and Update CD. Install the patches (if any) by double clicking on the executable files in the folder.

Configuring `periq` on the Windows Node

To configure periq on the Windows Node, you must edit the gen.cfg file. The following figure shows a sample gen.cfg file:

```
#
# All executables listed in this file should support the NT convention
# for srp-triggered termination.  If you do not know what this means,
# please do not add any entries to this file.
#
# NAME            NODE  PORT  is-VOS-CLASS      PRI   COMMAND LINE
#

alarmd            -     -     1           0     alarmd
configd           -     -     1           0     configd
conout            -     -     1           0     conout
psched            -     -     0           0     "psched -run"
nriod             -     -     1           0     nriod
#vastimer         -     -     0           0     vastimer
#screendaemon     -     -     0           0     screendaemon
pmgr              -     -     1           0     pmgr
#vsupd            -     -     0           0     vsupd
#periweb          -     -     0           0     periweb
#proxy            -     -     0           0     "proxy -S ccss -L cons -l info -k 10 -n"
#
#
#periq_bcm1000    -     -     0           0     "periq -s 16 -v bcm1000:1 -a sqlclnt -q odbc1 -mt"
#sqlclnt_bcm1000  -     -     0           0     "sqlclnt -v 1 -N bcm1000 -s 221 -U MG2gojitTV3Rd3X8
#
#
#periq_bcmpso     -     -     0           0     "periq -s 17 -v bcmpso:2  -a sqlclnt -q odbc2 -mt"
#sqlclnt_bcmpso   -     -     0           0     "sqlclnt -v 2 -N bcmpso  -s 222 -U MG2gojitTV3Rd3X8
```

In the gen.cfg file, make the following entry for `periq`:

`periq -v NodeA:3 -s16 -a sqlclnt -q odbcq32`

The preceding command starts periq and connects the Windows node to vmst number 3 (running on the host BCM) through port 16. Port 16 is the default port for `periq` and is configured in $ASEHOME/etc/services. The preceding command also restarts `sqlclnt` services and sets the queue name as odbcq32.

The following table lists periq attributes and their descriptions:

periq Attributes

Attribute	Description
-v[host:]vps	host and vps number
-s #	port number to vms
-P poll	new connection poll (default 15 seconds
-q [name:]#	[queue name:] number of tellers
-m {g|f}	not route GET or FREE to tellers
-m i	free tellers on ISSUE FREE from app
-m r	return undelivered message to tellers
-m t	time message flow
-a {rsc|ports}	announce restart to service
-X {a|s}	debug message flow (full or short form)
-X 1	debug queueing
-r {device|file}	redirect output (to /dev/tty#,/dev/console)
-H	help

Configuring sqlclnt on Windows Node

In the gen.cfg file, make the following entry for sqlclnt:

```
sqlclnt -v 3 -s 230 -N nodeA -u sa/peri@database -m odbc
-q odbcq32 -P 16 -Q 5
```

This command specifies the system to start the sqlclnt service and connect it to vmst 3 on Node A through port 230. Port 230 is one of many available to sqlclnt and is configured in $ASEHOME/etc/services. The unencrypted connection string to the database is sa/peri@database. Database mode is ODBC and sqlclnt is part of queue odbcq32. The sqlclnt service communicates with periq through port 16 with a ping rate of 5 seconds.

The following table lists sqlclnt attributes and their descriptions:

sqlclnt Attributes

Attribute	Description
-v #	vps number
-s port	port number to use

sqlclnt Attributes

Attribute	Description
-N host	VMS host machine (default - local)
-P port	PeriQ port (default - any)
-m queue_type	‘oracle’, ‘sybase’, ‘odbc’, ‘db2’ or ‘mssql’
-q name	associated queue name
-u [<usr>[/<passwd>][@<server><odbc dsn%OEM>]]	RDBMS connect string. If connect string contains @ or /, use \\ as escape character.
-U cryptstring	Crypted RDBMS connect string
-l directory	Enable SQL Timing, specify directory path to place log files
-S backup	user/psswd@server backup/fail over server. If connect string contains @ or /, use \\ as escape character
-B crypststring	Crypted RDBMS connect string for backup/fail over server
-c AUTOCOMMIT	Enable AUTOCOMMIT
-x Transaction Timeout	Transaction Timeout for a database Query (ODBC)
-L Login TimeOut	Login TimeOut (ODBC)
-T poll	new server connection poll (default 20 seconds)
-R #	number of re-cycle attempts (default forever)
-Q ping rate	Set ping rate for retrying connection to vmst (default 60 seconds)
-X {sln}	debugging level
-r {dev|file}	redirect output
-H	help

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