Script Languages User Guide

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About This Document

This guide describes how to install, migrate, and uninstall Script Languages. Script Languages are Open Source languages that have been ported to HP NonStop systems. The Script Languages product comprises three languages – Perl, PHP, and Python.

NOTE: Perl, PHP, and Python are collectively referred to as Script Languages throughout this guide.

This guide also includes NonStop specific support information for the Script Languages' features.

This guide does not provide comprehensive usage information for the Script Languages. For general usage information of the Script Languages, see their respective Open Source documentation.

Supported Release Version Updates (RVUs)

This publication supports J06.14 and all subsequent J-series RVUs, and H06.25 and all subsequent H-series RVUs, until otherwise indicated by its replacement publications.

Intended Audience

This guide is intended for NonStop administrators who install Script Languages on NonStop systems and software developers who write scripts using these languages. This document assumes that you are familiar with basic NonStop system administration, the Open System Services (OSS) environment, the Open Source Script Languages, and provides references to pertinent documents.

Related Documentation

Table 1 Related Documentation

Document name	Description
Script Languages reference pages	The Script Languages reference pages distributed as part of this software are available in the `/usr/share/man` directory. Reference pages installed under the `/usr/share/man` directory are not available from HP in book form and are not included in Open System Services reference manuals.
Open System Services User's Guide	This guide provides basic orientation, tutorial, and task information for using the OSS shell and utilities. It is written for all audiences: system administrators, managers, and operators; end users; and application and system programmers.

New and Changed Information in This Edition

Changes to the 700100-002 manual:

- Included Python information in the following sections:
  - "About This Document" (page 5)
  - "Introduction to Script Languages" (page 9)
  - "Features Supported in the Script Languages on NonStop Systems" (page 9)
  - "2. Installing the Required Language" (page 12)
  - "Default File Locations" (page 13)
  - "Uninstalling Script Languages" (page 13)
  - "Open Source References" (page 14)
  - "Open Source Script Languages Terms and Conditions" (page 16)
- Added Appendix "Python Features Not Supported on NonStop Systems" (page 15).

700100-001 is a new manual.

Document Organization

This document is organized as follows:

Section	Contents
"Introduction to Script Languages" (page 9)	This chapter provides a brief overview of the Open Source Script Languages that have been ported to NonStop systems.
"Installing Script Languages" (page 11)	This chapter provides the installation procedures for installing these Script Languages on NonStop systems.
Appendices	
"Open Source References" (page 14)	This appendix provides links to the official Open Source documentation sites for the Script Languages information.
"Python Features Not Supported on NonStop Systems" (page 15)	This appendix provides a list of Python modules that are not supported on NonStop systems.
"Open Source Script Languages Terms and Conditions" (page 16)	This appendix provides the terms and conditions of the Open Source software products upon which the NonStop ports of Perl, PHP, and Python are based.

Notation Conventions

General Syntax Notation

This list summarizes the notation conventions for syntax presentation in this manual.

UPPERCASE LETTERS

Uppercase letters indicate keywords and reserved words. Type these items exactly as shown. Items not enclosed in brackets are required. For example:

MAXATTACH

Italic Letters

Italic letters, regardless of font, indicate variable items that you supply. Items not enclosed in brackets are required. For example:

file-name

Computer Type

Computer type letters indicate:

- C and Open System Services (OSS) keywords, commands, and reserved words. Type these items exactly as shown. Items not enclosed in brackets are required. For example:

  Use the `cextdecs.h` header file.

- Text displayed by the computer. For example:

```
Last Logon: 14 May 2006, 08:02:23
```

- A listing of computer code. For example

```
if (listen(sock, 1) < 0)
{
perror("Listen Error");
exit(-1);
}
```

Bold Text

Bold text in an example indicates user input typed at the terminal. For example:

```
ENTER RUN CODE

?123
CODE RECEIVED:      123.00
```

The user must press the Return key after typing the input.

[ ] Brackets

Brackets enclose optional syntax items. For example:

```
TERM [\system-name.]$terminal-name

INT[ERRUPTS]
```

A group of items enclosed in brackets is a list from which you can choose one item or none. The items in the list can be arranged either vertically, with aligned brackets on each side of the list, or horizontally, enclosed in a pair of brackets and separated by vertical lines. For example:

```
FC [ num  ]
   [ -num ]
   [ text ]

K [ X | D ] address
```

{ } Braces

A group of items enclosed in braces is a list from which you are required to choose one item. The items in the list can be arranged either vertically, with aligned braces on each side of the list, or horizontally, enclosed in a pair of braces and separated by vertical lines. For example:

```
LISTOPENS PROCESS { $appl-mgr-name }
                  { $process-name  }

ALLOWSU { ON | OFF }
```

| Vertical Line

A vertical line separates alternatives in a horizontal list that is enclosed in brackets or braces. For example:

```
INSPECT { OFF | ON | SAVEABEND }
```

… Ellipsis

An ellipsis immediately following a pair of brackets or braces indicates that you can repeat the enclosed sequence of syntax items any number of times. For example:

```
M address [ , new-value ]…

 - ] {0|1|2|3|4|5|6|7|8|9}…
```

An ellipsis immediately following a single syntax item indicates that you can repeat that syntax item any number of times. For example:

```
"s-char…"
```

Punctuation

Parentheses, commas, semicolons, and other symbols not previously described must be typed as shown. For example:

```
error := NEXTFILEN.A.ME ( file-name ) ;

LISTOPENS SU $process-name.#su-name
```

Quotation marks around a symbol such as a bracket or brace indicate the symbol is a required character that you must type as shown. For example:

```
"[" repetition-constant-list "]"
```

Item Spacing

Spaces shown between items are required unless one of the items is a punctuation symbol such as a parenthesis or a comma. For example:

```
CALL STEPMOM ( process-id ) ;
```

If there is no space between two items, spaces are not permitted. In this example, no spaces are permitted between the period and any other items:

```
$process-name.#su-name
```

Line Spacing

If the syntax of a command is too long to fit on a single line, each continuation line is indented three spaces and is separated from the preceding line by a blank line. This spacing distinguishes items in a continuation line from items in a vertical list of selections. For example:

```
ALTER [ / OUT file-spec / ] LINE

   [ , attribute-spec ]…
```

Publishing History

Part Number	Product Version	Publication Date
700100–001	N.A.	August 2012
700100–002	N.A.	February 2014

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1 Introduction to Script Languages

A script language is a programming language that supports the writing of scripts. Scripts are programs written for a software environment that automate the execution of tasks that could alternatively be executed by a user. This guide describes the Open Source Script Languages that have been ported to HP NonStop systems:

- Perl is a general-purpose programming language originally developed for text manipulation and now used for a wide range of tasks including system administration, web development, network programming, GUI development, and more. Perl is easy to use and supports both procedural and object-oriented (OO) programming. Perl is a Copyright © of The Perl Foundation. On NonStop platform, Perl is shipped in the Script Languages product from H06.25 and subsequent H-series, and J06.14 and subsequent J-series RVUs.
- PHP is a general-purpose server-side scripting language originally designed for web development to produce dynamic web pages. It is among one of the first developed server-side scripting languages that is embedded into an HTML source document, rather than calling an external file to process data. Ultimately, the code is interpreted by a web server with a PHP processor module, which generates the resulting web page. PHP has evolved to include a command-line interface capability and can be used in standalone applications. PHP is a Copyright © of the PHP Group and the PHP Documentation Group. On NonStop platform, PHP is shipped in the Script Languages product from H06.25 and subsequent H-series, and J06.14 and subsequent J-series RVUs.
- Python is a general-purpose, high-level programming language used for a wide variety of application domains and available for all major operating systems. Its design philosophy emphasizes code readability, and its syntax allows programmers to express concepts in fewer lines of code compared to other programming languages such as C.

  Python supports multiple programming paradigms, including object-oriented, imperative and functional programming or procedural styles. It features a dynamic type system and automatic memory management and has a large and comprehensive standard library.

  Like other dynamic languages, Python is often used as a scripting language, but is also used in a wide range of non-scripting contexts. Python is a Copyright © of the Python Software Foundation. On NonStop platform, Python is shipped in the Script Languages product from H06.28 and subsequent H-series, and J06.17 and subsequent J-series RVUs.

Features Supported in the Script Languages on NonStop Systems

The NonStop ports of the Script Languages provide all of the features of their Open Source counterparts except the following:

- Access to the NonStop database through the ODBC/MX layer.
- Access to the NonStop database through Database Interfaces drivers and DBM libraries.
- Support for CGI programming with iTP webserver.

In addition to the above, the NonStop port of Python does not support:

- Foreign function interface (FFI) through `libffi` or `ctypes` module.
- GUI programming using `Tkinter` module.
- Modules, libraries, and packages available in https://pypi.python.org/pypi or elsewhere.

For a list of non-supported features of Python, see "Python Features Not Supported on NonStop Systems" (page 15).

NOTE: Any feature of Python is supported on a NonStop system if and only if a POSIX or open standard API is available on OSS of NonStop, and is compatible with the open source product. For example, Python's `-R` option is not supported on NonStop because it needs `/dev/urandom`.

Script Languages Reference Pages

Except for edits to include NonStop-specific information, the reference pages supplied for the Script Languages on NonStop systems are passed through without changes to their Open Source original content. These reference pages are available in the `/usr/share/man` directory; these reference pages are not available from HP in book form and are not included in Open System Services reference manuals.

Script Languages Functions

The Script Languages have a large number of in-built and external module-based programmatic interfaces. For the comprehensive list and details of the functions supported in the Script Languages, see their respective documentation at:

- http://perldoc.perl.org/
- http://www.php.net/manual/en/
- http://docs.python.org/2.7/

2 Installing Script Languages

This chapter describes how to obtain, migrate, install, and uninstall Script Languages on a NonStop system.

Prerequisites

Before you install and use Script Languages, ensure that the following software is installed on the NonStop system:

- Open System Services (OSS) environment on a NonStop system running the NonStop operating system H06.25 or later, or J06.14 or later.

Obtaining Script Languages

Based on your requirements, you can either download supported or unsupported (ITUGLIB) versions.

Supported Version

The supported versions are pre-built binaries which are shipped as part of a NonStop RVU, or an SPR that can be downloaded from the Scout website. This guide is applicable only for the supported versions of Script Languages.

Unsupported Version

You can download an unsupported version of these languages from the Connect website. This manual does not further cover the unsupported versions. For more information about the installation of the unsupported packages, see the README file available in the source directory.

Migrating From One Version to Another

Migrating from one version of Perl or Python to another will not cause any loss of data. However, before migrating from one version of PHP to another version, you must manually back up the `php.ini` configuration file if you want to retain the previous configuration data.

To install the supported version, see "Installing Script Languages" (page 11)

Falling Back to a Previous Version

To revert to a previous version, complete the following steps:

1. If reverting PHP to a previous version, back up the `php.ini` configuration file.
2. Uninstall the current version.
3. Install the previous version.
4. If reverting PHP to a previous version, restore the `php.ini` configuration file.

Installing Script Languages

Installation of Script Languages involves two steps:

1. Extracting the T1203PAX archive file contents
2. Installing the required language

1. Extracting the T1203PAX Archive File Contents

You can extract the contents of the T1203PAX archive using either the Distributed Systems Management/Software Configuration Manager (DSM/SCM) tool or the COPYOSS command from a TACL prompt.

Using DSM/SCM

Perform the following steps to extract the contents of the T1203PAX file in the standard OSS directory using DSM/SCM:

1. Obtain the product files from the disk (distribution subvolume (DSV) locations) or tape.
2. In the DSM/SCM planner interface, select the **Manage OSS Files** option for the target configuration.

   NOTE: If you do not select the **Manage OSS Files** option in the DSM/SCM planner interface, DSM/SCM places the T1203PAX file in the Guardian subvolume $ISV.ZOSSUTL (where, ISV is the installation volume). Use the `COPYOSS` command to extract and place the contents of the T1203PAX file in the OSS file system.

3. Copy the extracted product files to a new software revision of the configuration you want to update.
4. Run the `Build request` and `Apply request` command on the configuration revision.
5. Run the `ZPHIRNM` command to rename the product files.

For more information about using DSM/SCM, see the *DSM/SCM User's Guide*.

Using the COPYOSS Command

Perform the following steps to extract the contents of the T1203PAX file in the OSS file system using the `COPYOSS` command:

1. Log on to the NonStop system using your super ID:

   ```
   TACL> LOGON SUPER.SUPER
   ```

2. Go to the Guardian subvolume $ISV.ZOSSUTL:

   `TACL> VOLUME $ISV.ZOSSUTL`, where ISV is the installation volume.

3. Extract the T1203PAX file using the TACL macro `COPYOSS` command:

   ```
   TACL> COPYOSS T1203PAX
   ```

The `COPYOSS` command extracts the product files from the T1203PAX file and places them in the OSS file system.

For more information about using the `COPYOSS` command, see the *Open System Services Management and Operations Guide*.

2. Installing the Required Language

After the T1203PAX file extraction is complete, the individual language package files and the installation and uninstallation scripts are available at the `/usr/installers/T1203` directory.

From OSS, as the SUPER.SUPER user, run the install script, `install.sh`, followed by the language name to install the desired language. For example,

- To install Perl: `install.sh perl`
- To install more than one package, say PHP and Python: `install.sh php python`
- To install all packages: `install.sh`

Default File Locations

Upon successful installation, the files pertaining to the installed languages are placed in their default locations:

Table 2 Script Languages Default File Locations

Default File Location	Contents
`/usr/bin`	Contains Perl, PHP, Python, and other utility scripts.
`/usr/lib/`	Contains subdirectories comprising library files pertaining to Script Languages. This is also the default location where an external package module gets installed, if the package distributes such files.
`/usr/include/`	Contains subdirectories comprising header files pertaining to Script Languages.
`/usr/share/man`	Contains Script Languages reference pages.
`/usr/installers/T1203`	Contains the Script Languages package files, installation and uninstallation scripts.

Uninstalling Script Languages

The uninstall script, `uinstall.sh`, is present in the `/usr/installers/T1203` directory. From OSS, as the SUPER.SUPER user, run the uninstall script followed by the language name to install the desired language. For example,

- To uninstall Perl: `uinstall.sh perl`
- To uninstall more than one package, say PHP and Python: `uinstall.sh php python`
- To uninstall all packages: `uinstall.sh`

A Open Source References

For comprehensive information, see:

- Perl documentation at http://perldoc.perl.org/
- PHP documentation at http://www.php.net/manual/en/
- Python documentation at http://docs.python.org/2.7/

B Python Features Not Supported on NonStop Systems

The following table lists some of the Python standard library modules unsupported on NonStop. Note that this is not a comprehensive list.

Queue	numbers	macpath	anydbm
dbm	gdbm	dbhash	bsddb
sqlite3	ctypes	threading	thread
dummy_threading	dummy_thread	multiprocessing	mmap
ssl	mailcap	mimify	MultiFile
xml.dom	xml.parsers.expat	webbrowser	ftplib
poplib	imaplib	nntp	smtplib
smtpd	telnetlib	socketserver	BaseHTTPServer
SimpleHTTPServer	CGIHTTPServer	Cookie	cookielib
SimpleXMLRCPServer	xmlrpclib	DocXMLRPCServer	sunau
chunk	imghdr	sndhdr	ossaudiodev
Tkinter	ttk	Tix	ScrolledText
turtle	IDLE	PyGTK	PyQt
wxPython	hotshot	user	fpectl
rexec	Bastion	imputil	symbol
MS Windows Specific Services	spwd	dl	tty
pty	posixfile	resource	nis
Mac OS X specific services	MacPython OSA Modules	SGI IRIX Specific Services	SunOS Specific Services

C Open Source Script Languages Terms and Conditions

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