SOFTWARE RELEASE DOCUMENT (SOFTDOC)

Product:	Shadowbase
Release:	Gravic Version 6.720 HPE NonStop Shadowbase: T1122-ABC (SB Repl/Guardian)
Release Date:	March 17, 2023
Copyright Notice:	Copyright Gravic, Inc. 1995 – 2023 (www.gravic.com)
File Name:	IPM6720.pdf

VERY IMPORTANT: Due to licensing changes, existing Shadowbase installations will require a new license file in order to install and run Version 6.700. This is true for any Shadowbase upgrade when the prior release is before Version 6.700 and the new release you plan to install is version 6.700 or after (more recent)…

Contact the HPE License Manager to request a new license file <license.manager@hpe.com>. DO NOT INSTALL Shadowbase Version 6.700 (or later) software until a new license file has been received.

NOTE: If this is a TCD delivery, please see NOTE FOR TCDS for TCD delivery information.

NOTE: This softdoc covers new features and corrected problems for Shadowbase for J, and L series Guardian NonStop operating system versions. This softdoc is available in an Adobe PDF file (.PDF). Softdoc files are named IPMnnnn (where nnnn is the Shadowbase version number).

NOTE: This softdoc applies to the HPE NonStop Shadowbase Replication for Guardian component. Other softdocs document the releases of the other components in T1122, including:
- HPE Shadowbase Audit Reader,
- HPE Shadowbase Enterprise Manager, and
- HPE Shadowbase Compare for SQL.

You are advised to reference those other softdocs for the changes related to those specific components of T1122.

NOTE: **Supported Release Version Updates (RVUS)**: This softdoc applies to all currently supported database and operating system versions as described by the Shadowbase Supported Versions Cross-Reference. In addition, visit the http://www.ShadowbaseSoftware.com web site for the list of supported platforms and databases, and the Shadowbase Software Support Policy for Software Versions by clicking here https://shadowbasesoftware.com/support/shadowbase-software-product-release-and-support-policies/.

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Disclaimer

We are distributing this communication in an effort to bring important information to the attention of users of the affected products. We recommend that all users determine the applicability of this information to their individual situations and take appropriate action. We do not represent or warrant that this information is necessarily accurate or complete for all user situations and, consequently, we will not be responsible for any damages resulting from the user's use or disregard of the information provided. To the extent permitted by law, we disclaim all representations and warranties, whether express, implied, statutory, or otherwise, including the warranties of the merchantability, fitness for a particular purpose, title, and non-infringement.

We expect customers of the Shadowbase product suite to "stay current" on Shadowbase releases. This means that you, the customer, should periodically upgrade your Shadowbase software to a newer release that is under support before support ends on your current release. For most customers, this means that you will want to upgrade while your release is in 'ACTIVE' support. Otherwise, you run the risk of not being able to get full (or even any if the release has gone 'OBSOLETE' end-of-service-life) support for the version you are running.

The Shadowbase Software Policy for Software Versions is described here: https://shadowbasesoftware.com/support/shadowbase-software-product-release-and-support-policies/. We encourage all customers to periodically review this material and plan for periodic upgrades to their Shadowbase software. Contact Support if you need additional information.

Note for TCDs

TCD (Temporary Code Delivery) – A software update delivered via an SPR downloadable from an FTP dropbox. A TCD is an early version, intended for customer testing only (not production usage). A TCD by definition is restricted to certain customers. Note that a "Gravic TCD" is delivered directly from Gravic, not via HPE, but otherwise has the same attributes.

A TCD is provided only to the specified customer for the purposes agreed between the customer and Gravic as to how it will be used. A TCD is provided subject to the following terms and conditions in addition to the existing written license governing the use of Shadowbase:

- A TCD is provided for evaluation and test purposes only for no more than ninety (90) days use, and is not to be used in production systems
- A TCD may not have been fully tested by Gravic, no warranties are implied as to its behavior
- A TCD is delivered directly from Gravic to the customer, it is not available from HPE/SCOUT
- As testing proceeds, iterative TCD deliveries may be necessary as issues are identified/resolved
- A TCD is temporary, after evaluation it is to be withdrawn from use by the customer
- After testing completes, a TCD may or may not subsequently be released as a Shadowbase TCF or otherwise be included in the Shadowbase product line

Please see https://www.shadowbasesoftware.com/support/shadowbase-software-product-release-and-support-policies/shadowbase-software-release-glossary/ for additional information.

Mature and Deprecated Features

This section provides a list of mature features ("*mature features*") and deprecated features ("*deprecated features*") for HPE NonStop Shadowbase. Gravic will continue to support *mature features* and will continue to include them in future releases; however, Gravic will not enhance those features further or qualify them on newer versions of operating systems and databases as they become available. If you are using a *mature feature*, Gravic highly recommends moving off the *mature feature* to the suggested replacement approach as soon as possible. New installations should avoid using *mature features*; please discuss this issue with Gravic if you feel you must use a *mature feature*.

Gravic will also continue to support *deprecated features* in the current release. However, Gravic plans to eliminate the deprecated features in a future release and *strongly* recommends that customers begin the planning and implementation to move off the feature immediately. Contact Gravic if you need assistance in planning your migration.

Table 1 - MATURE Features in HPE NonStop Shadowbase, below, lists the features that are currently considered 'mature' by Gravic, along with the release/date where they were declared mature. Again, please note that the *mature* designation means the feature will not be enhanced and will eventually be deprecated (retired).

Table 2 - DEPRECATED Features in HPE NonStop Shadowbase, below, lists the deprecated features. The deprecated features are no longer being enhanced, and are on a schedule to be retired. The table also contains a column indicating the date of the last release that will contain the deprecated functionality (the last release before this end date will be the last release to contain this functionality). Please note that release plans are subject to change without notice and delivery dates are not guaranteed. However, Gravic currently expects that all general availability releases up to and including the date of the last release will contain the deprecated feature(s).

Please see Shadowbase Software Product Release and Support Policies on www.shadowbasesoftware.com for additional information regarding the Shadowbase Software Support Policy.

Table 1 - MATURE Features in HPE NonStop Shadowbase

Feature	Description	Mature Release
AUDCOLLN	The original native mode collector, AUDCOLLN is now mature and is being replaced by the new SBCOLL collector. AUDCOLLN will continued to be maintained for critical issues and tested, but will no longer be enhanced with new features and capabilities.	NSB 6.410
CONSTXBQ	A user exit-bound consumer that will process queue file events by use of a mapping file and batches transactions. Consider replicating queue files using the ALLOWQUEUEFILE REPLICATEKEY option along with the CONSTXB user exit-bound consumer instead if transaction batching is needed.	NSB 6.600
Format 1 TMF Audit Trails	While still supported, Gravic recommends that any customers still using Format 1 Audit Trails migrate to Format 2 TMF Audit Trails.	NSB 6.410
ENS2SQL	Tool used to convert Enscribe DDL records to SQL/MP tables, effectively replaced by SBDDLUTL	NSB 6.600
Shadowbase Enterprise Manager (SEM)	Windows tool used to monitor Shadowbase environments in a GUI setting.	NSB 6.710

Table 2 - DEPRECATED Features in HPE NonStop Shadowbase

Feature	Description	Deprecated Release	Last Release Date
Non-native Consumer	The non-native version of the consumer (AUDCONS) is deprecated. Customers still using the non-native version of the consumer should immediately begin planning to move to the native version (AUDCONSN).	NSB 6.410 April, 2018	April, 2020

Loader	The original Shadowbase Loader (LOADER) is deprecated. Customers still using LOADER to load files and tables should immediately begin planning to move to the Shadowbase Online Loader (SOLV). Note – the SB KREP feature currently uses LOADER internally, that will also be replaced in a future release.	NSB 6.300 May, 2017	May, 2019
SBLINK	The original program used to connect SEM to a NonStop environment, replaced by listener AUDCOM process.	NSB 6.220 May, 2016	NSB 6.320 May, 2017
SBQFILE	Program used in conjunction with replicating Enscribe queue files to target non-queue key-sequenced files, replaced with exact queue file replication.	NSB 6.220 May, 2016	NSB 6.320 May, 2017
SQL92	Protocol used by Shadowbase components between the NonStop and Other Servers, replaced by SQLSBV1. Please upgrade your configuration as soon as possible.	NSB 6.320 May, 2017	NSB 6.410 April, 2018

Supported Database and Operating System Versions

The database and operating systems versions supported by HPE Shadowbase can be found on the Gravic Shadowbase website. Please see Supported Databases and Platforms on www.shadowbasesoftware.com for additional information regarding Shadowbase support for databases and operating systems.

Special Notes for Version 6.720

1) As of Version 6.700, customers are required to update their license / SHADPASS files. Shadowbase will not start if an old (pre version 6.700) SHADPASS is used. Contact your HPE Shadowbase account representative for a renewed license.

2) As of Version 6.700, the message format has been modified in preparation for future enhancements and is incompatible with prior versions of Shadowbase for NonStop servers. Because of this change, *you must upgrade all nodes at the same time*. Shadowbase for NonStop 6.700 or later cannot interoperate with prior versions.

If you are replicating from NonStop to NonStop, the recommended upgrade procedure is as follows:

Prior to upgrading:

- Install Shadowbase 6.720 on each node involved in replication in a different location from your existing Shadowbase installation.
- Create a new configuration based upon your existing configuration, using the new location for the Shadowbase programs.
- **Do not** modify the locations of the Shadowbase files required for restarting. These files are compatible across versions and will be used to insure no data loss during the upgrade. These include:
    - o The Collector's restart file location
    - o The Queue Manager's restart file location
    - o The Queue Manager's queue file locations
    - o The Consumer's TIDFILE, TRANSLOG, TRACKTXFILE, and OVFLQFILE file locations.

Upgrading:

- Select a time window for performing the upgrade, preferably with little or no activity.
- Gracefully shutdown the existing replications threads using the AUDCOM SHUTDOWN command.
- Restart replication using the new configuration files.
- Shadowbase will resume replication from where it was shutdown.

QMGR Note: Starting with Version 6.700, the Queue Manager has been modified to allow it to read pre-V6.700 queue data and to convert it to the new format prior to sending to the Consumer. This facility allows Shadowbase to be upgraded with data in the queue files without data loss, as long as the queue file location is not changed during the upgrade.

If you would like assistance in planning your upgrade of your NonStop Shadowbase environment, please contact HPE support.

3)   Version 6.720 (T1122H06^ABC) includes one main set of new functionality, applied to the Version 6.700 series code base, along with a roll-up of prior Version 6.614 changes and a couple of additional fixes. The new functionality allows for more detailed mapping specification for CREATE replication via the new CREATELIKE and CREATELIKEALTPREFIX parameters. See the New Features and New and Modified SET DBS Parameters sections for more information on this, and the Problems Corrected section for information on the other fixes included.

4)   A full package of the normal release files is included with this release for convenience, and it can be installed without any prerequisite versions of the product. This release includes a full update of all programs in the HPE NonStop Shadowbase Guardian Replication (NS Repl) for HPE Integrity NonStop X (L Series) component. The VPROC version information is updated accordingly for each component that has changed. The other component files included in the release are the same as those included with Version 6.700^AAW.

5)   If upgrading from a version prior to 6.700(T1122H06^AAW), see the Version 6.700 softdoc (IPM6700.docx) included along with this release for further information, including additional special notes applicable to the upgrade.

Changes in Release 6.720 (since Version 6.700)

New Features

1) Audit DDL replication of CREATE events supports new enhancements, allowing for more sophisticated mapping of secondary partitions and alternate key files for the file created on the target system. The enhanced mapping is configured via the new DBS parameters, CREATELIKE and CREATELIKEALTPREFIX. See the related new DBS parameter documentation for further details.

2) The KEYSPECIFIER parameter may now be used to configure replication of Enscribe Entry-sequenced files using a non-unique alternate key to apply update events to the target file. Previously, this was limited to using unique alternate keys.

Problems Corrected

1) The validation logic for preventing use of the AUDITED CREATEOPTIONS DBS parameter option was incorrectly checking the last Consumer added, instead of the Consumer associated with the DBS. This could cause the AUDMON backup process to fail during takeover in the event of a failure of the primary AUDMON process, due to to mistakening determining it to be an invalid configuration. This could occur when all of the following conditions are met:
   1) The environment is bidirectional (i.e. TRANSLOG files are in use).
   2) There are a mix of Consumers with and without a TRANSLOG configured (e.g. a mix of unidirectional and bidirectional Consumer threads in the environment).
   3) There are one or more DBS objects configured with the CREATEOPTIONS AUDITED option specified.

2) When configured to retry an error 4, the Consumer would treat this as an error that failed to open the file, rather than a warning that had (partially) succeeded in opening the file (the open of an alternate key failed, but the base file was opened successfully). As a result, the Consumer would not close the initial file open before attempting to retry, and an orphaned file open from the original attempt would remain until the consumer process was stopped.

3) The consumer will now log a message and abend if configured to replicate a file by using an alternate key that doesn't exist on the target.

New and Modified SET DBS Parameters

CREATELIKE   <file name>

Initial Version	Changed Version	Values Default	Minimum	Maximum	Alter

| 6.620 | None | n/a | n/a | No |

When replicating Enscribe create events, the CREATELIKE file's attributes are used instead of the source's. Any secondary partition volumes in the CREATELIKE file's attributes will be used to create the new target file. Any alternate key files will be created on the target node, with the volume and subvolume of the corresponding CREATELIKE alt file. If CREATELIKEALTPREFIX is omitted or set to 0, the name part of the target alt files will match the corresponding source alt file names and the CREATELIKE file cannot have more alt files than the source file.

For example, consider a Shadowbase environment with the following DBS parameters:

```
SOURCEFILE \SRC.$DATA1.SRCSUB.TL*
TARGETFILE \TGT.$DATA1.TGTSUB.*
CREATELIKE \TGT.$DATA1.MAPSUB.TLYYMMDD
```

The CREATELIKE file is defined with the following attributes:

```
$DATA1.MAPSUB.TLYYMMDD
    ENSCRIBE
    TYPE E
    FORMAT 2
    EXT ( 100 PAGES, 100 PAGES )
    REC 4048
    BLOCK  4096
    ALTKEY ( "CR", FILE 0, KEYOFF 38, KEYLEN 30 )
    ALTKEY ( "PR", FILE 1, KEYOFF 0, KEYLEN 3 )
    ALTKEY ( "TR", FILE 2, KEYOFF 14, KEYLEN 24 )
    ALTFILE ( 0, $DATA1.TGTSUB.T0YYMMDD )
    ALTFILE ( 1, $DATA1.TGTSUB.T1YYMMDD )
    ALTFILE ( 2, $DATA1.TGTSUB.T2YYMMDD )
    PART ( 1, $DATAX, 100 PAGES, 100 PAGES )
    PART ( 2, $DATAY, 100 PAGES, 100 PAGES )
    PART ( 3, $DATAZ, 100 PAGES, 100 PAGES )
    AUDIT
    MAXEXTENTS 16
    BUFFERED
    OWNER 255,5
    SECURITY (RWEP): NCNC
```

While Shadowbase is running, a new file is created on the source system like so:

```
$DATA1.SRCSUB.TL230101
    ENSCRIBE
    TYPE E
```

```
    FORMAT 2
    EXT ( 100 PAGES, 100 PAGES )
    REC 4048
    BLOCK  4096
    ALTKEY ( "CR", FILE 0, KEYOFF 38, KEYLEN 30 )
    ALTKEY ( "PR", FILE 1, KEYOFF 0, KEYLEN 3 )
    ALTKEY ( "TR", FILE 2, KEYOFF 14, KEYLEN 24 )
    ALTFILE ( 0, $DATA1.SRCSUB.T0230101 )
    ALTFILE ( 1, $DATA2.SRCSUB.T1230101 )
    ALTFILE ( 2, $DATA3.SRCSUB.T2230101 )
    PART ( 1, $DATA1, 100 PAGES, 100 PAGES )
    PART ( 2, $DATA2, 100 PAGES, 100 PAGES )
    PART ( 3, $DATA3, 100 PAGES, 100 PAGES )
    AUDIT
    MAXEXTENTS 16
    BUFFERED
    OWNER 255,5
    SECURITY (RWEP): NCNC
```

When Shadowbase replicates this create event, the CREATELIKE file results in
the following file created on the target:

```
$DATA1.TGTSUB.TL230101
    ENSCRIBE
    TYPE E
    FORMAT 2
    EXT ( 100 PAGES, 100 PAGES )
    REC 4048
    BLOCK  4096
    ALTKEY ( "CR", FILE 0, KEYOFF 38, KEYLEN 30 )
    ALTKEY ( "PR", FILE 1, KEYOFF 0, KEYLEN 3 )
    ALTKEY ( "TR", FILE 2, KEYOFF 14, KEYLEN 24 )
    ALTFILE ( 0, \TGT.$DATA1.TGTSUB.T0230101 )
    ALTFILE ( 1, \TGT.$DATA1.TGTSUB.T1230101 )
    ALTFILE ( 2, \TGT.$DATA1.TGTSUB.T2230101 )
    PART ( 1, $DATAX, 100 PAGES, 100 PAGES )
    PART ( 2, $DATAY, 100 PAGES, 100 PAGES )
    PART ( 3, $DATAZ, 100 PAGES, 100 PAGES )
    AUDIT
    MAXEXTENTS 16
    BUFFERED
    OWNER 255,5
    SECURITY (RWEP): NCNC
    DATA MODIF:   2 Feb 2023, 12:31
    CREATION DATE:   2 Feb 2023, 12:31
    LAST OPEN:   2 Feb 2023, 12:31
    FILE LABEL: 546 (13.4% USED)
    EOF: 0 (0.0% USED)
    EXTENTS ALLOCATED: 0
```

The filenames of the base file and all altfiles match the source file, but all the other attributes match the CREATELIKE file, including partition volumes and altfile volumes and subvolumes.

CREATELIKEALTPREFIX   <number>

Initial Version	Changed Version	Values Default	Minimum	Maximum	Alter
6.620		0	0	7	No

When this parameter is set greater than 0, the target alt file names will be generated from the corresponding CREATELIKE alt file name and the source base file name. When used, the name will be the first <number> characters from the CREATELIKE alt file, followed by the rest of the source base file.

KEYSPECIFIER   <key-specifier>

Initial Version	Changed Version	Values Default	Minimum	Maximum	Alter
4.090	6.720		-32768	32767	No

This parameter is used to identify the key-specifier associated with a target file alternate key file to be used when applying events (the supplied alternate key file is used for positioning). When replicating BASE24 files, this will be made available to BASE24 handler code in the Consumer to aid in identifying a unique record in a target file.

Starting with release 6.700, this processing is available to all application environments, not just those using BASE24. The feature was originally only available for unique alternate key files, however that restriction has been removed and it can be used with non-unique alternate keys (in version 6.720).

The value can be entered as a 2 byte string delimited by double quotes (e.g., "A" or "I1" or "IX", etc.) or can be specified as a number in the range -32768 to 32767 similar to how the key-specifier can be defined within the NonStop FUP utility.

Note: By default, HPE Shadowbase uses the primary key value of the source record/row to position against the target file's primary key to locate the correct target record/row to process. This feature allows an alternate key file to be used.

New or Modified EMS Messages

2185	CREATELIKE MUST BE SET IF CREATELIKEALTPREFIX IS SET

Cause: The DBS parameter CREATELIKEALTPREFIX is set greater than 0, but the DBS parameter CREATELIKE is not set ON.

Effect: The DBS object is not added.

Recovery: Set CREATELIKE ON or set CREATELIKEALTPREFIX to 0.

2095	FILEMNT: UNABLE TO MAP ALTKEY FILES FOR SOURCE <filename>, CREATELIKE <filename>, AND TARGET <filename>, TARGET FILE WILL NOT BE CREATED

Cause: The Consumer encountered an error while attempting to map the alt key file names while replicating an Enscribe create event.

Effect: The target file will not be created.

Recovery: Check your configuration.

2095	FILEMNT: FAILED TO CREATE <filename> FROM SOURCE FILE <filename> AND CREATELIKE FILE <filename>

Cause: The Consumer encountered an error while replicating an Enscribe create event.

Effect: The target file will not be created.

Recovery: Check your configuration.

2095	FILEMNT: UNABLE TO EXTRACT CREATELIKE NODE FROM <filename>; TARGET FILE <filename> WILL NOT BE CREATED

Cause: The Consumer was unable to determine the node name from the reported file.

Effect: The target file will not be created.

Recovery: Check your configuration.

Validating Downloaded Files

Gravic provides an SHA1 checksum and the size of the release package (file) in bytes. The purpose of this is so that the user can confirm that the release package they downloaded is valid and free from corruption/tampering.

- For HPE Shadowbase releases, this information is published in the HPE SOFTDOC that corresponds with the specific SPR version of the software. The HPE SOFTDOC for a specific SPR version is available on the HPE SCOUT portal. This information can also be found on the Gravic Shadowbase website here (https://www.shadowbasesoftware.com/releases).
- For non-HPE Shadowbase releases, for example Shadowbase releases obtained directly from Gravic (regardless if an HPE TCD release or a direct Gravic licensee release), this information is included in the body of the Gravic email that provides the link to download the software. This information can also be found on the Gravic Shadowbase website here (https://www.shadowbasesoftware.com/releases/gravic).

All Shadowbase releases are provided as Windows format download files. The user should validate the downloaded release file size by comparing it with the published release file size.

In order to validate the SHA1 checksum of the downloaded file, users can run the following command on a Windows system where the file was downloaded in order to generate the checksum in their own environment:

```
certutil -hashfile <downloaded filename> SHA1
```

Users can compare the certutil-generated checksum value against the published checksum value to make sure they match. Note that any other SHA1 generation tool can also be used to create the checksum value on the downloaded file. The certutil method is just one available option for Windows environments, and is included as part of Certificate Services.

Installation Instructions (HPE NonStop Shadowbase)

Shadowbase is now built for HPE NonStop installations using the HPE PAK and UNPAK utilities – refer to the G06.16 and above operating system documentation (or contact Shadowbase Support) for more information. The SBPAK file described below is delivered as a self-extracting file.

1) Binary FTP the SBPAK from your PC (if you obtained the files from a Gravic FTP site) or DVD. If FTP was used, enter the following commands to alter the file code.

       For J-based systems:
           FUP ALTER SBPAK, CODE 800

       For L-based systems:
           FUP ALTER SBPAK, CODE 500

2) To "unpak" the files from the self-extracting SBPAK, enter the following command:

RUN SBPAK,   *.*.*, VOL <restore volume and subvolume>, LISTALL, MYID

Where <restore volume and subvolume> is the location you want the Shadowbase files installed into, e.g. $DATA.SHADBASE

3) Follow instructions in the Installing Shadowbase on a NonStop System section of the ***HPE Shadowbase NonStop Installation and Planning Manual***. You must now run either the INSTALL or ENSINST script.

IMPORTANT NOTES ABOUT USER EXITS:

IF YOU HAVE USER EXITS DEVELOPED WITH COBOL, YOU MUST RECOMPILE THE USER EXIT "PROGRAMS" SO THAT THE LATEST VERSION OF USRXLIBO OR USRXLIBN (the native library) IS ADDED TO THE RESULTING OBJECT FILE THAT WILL SUBSEQUENTLY BE INCLUDED IN THE FINAL BIND OR LINK.

AFTER COMPILING THE USER EXITS (IF NECESSARY AS DISCUSSED ABOVE), RUN BINDUSRX, BINDXYPR OR LINKUSRX TO GENERATE THE CUSTOM CONSUMER (AUDCONS OR AUDCONSN). NOTE THAT THIS SHOULD BE DONE AFTER THE STANDARD INSTALL IS RUN.

HPE Release File Structure

If this release is obtained through HPE Scout, the downloaded file is a single self-extracting zip file that is intended to be run on a Windows PC. When the zip file has extracted itself, it will create a folder structure on the PC with all of the various pieces of Shadowbase in appropriate folders. This folder structure is as follows:

CONTENTS
Each component's installation files are in a separate directory in the self-extracting ZIP file or on the product DVD under the directory \T1122HO6-<SPR ID>. This file set contains the following files:

File or Directory	Description
\readme.txt	This file.
\SBEnterpriseManager	Directory containing the files required to install SEM on a PC.
\TNS-E	Directory containing the installation files for the HPE Integrity NonStop i versions of NS Repl, SAR, and Compare.
SBAuditReader	Directory containing the installation files for SAR.
SBCompare	Directory containing the installation files for Compare.
SBReplication	Directory containing the installation files for NonStop Guardian replication.
\TNS-X	Directory containing the installation files for the HPE Integrity NonStop X versions of NS Repl, SAR, and Compare.
SBAuditReader	Directory containing the installation files for SAR.
SBCompare	Directory containing the installation files for Compare.
SBReplication	Directory containing the installation files for NonStop Guardian replication.

Known Problems Remaining

Please see the Software Release Document for Shadowbase Version 6.700^AAW
(IPM6700) for a list of known problems remaining.

[*** End of Document *****]**