



JVN Tool Suite

User Installation Guide

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1. Introduction

The JVN Tool Suite provides an integrated capability for testing a wide range of Air Traffic Control (ATC) systems that manage the National Air Space (NAS). These tools are used in various laboratories of the Federal Aviation Administration (FAA) William J. Hughes Technical Center (WJHTC) during all phases of testing, as well as, research and sustainment efforts. Capabilities include scenario development, simulation of the operational environment, replay of real-life recorded data, system command injection, and data reduction and analysis. The tools can be configured to operate in combinations of real and virtual system interfaces for EnRoute and Terminal environments, including En Route Automation Modernization (ERAM), Standard Terminal Automation Replacement System (STARS), Data Communications (DataComm), and Time Based Flow Management (TBFM).

2. Software Installation

This document details the process of installing the JVN Tool Suite including Airspace Visualization Display (AViD), Dynamic Simulation (DYSIM), Graphic Simulation Generation Tool (GSGT), Simulation Driver Radar Recorder (SDRR), SiteShadow, and Lab Utilities, as well as prerequisite software packages on a linux Slackware platform. The target systems should be processors with Slackware version 14.0 (32 bit) or 14.2 (64 bit) installed.

2.1. Qt Graphics Library

The Qt Graphics Library must be installed on each processor that will be running any component of the JVN Tool Suite.

- a. Log onto each processor as the root user.
- b. Copy the Qt Install Package into the /tmp directory.
- c. From the /tmp directory, extract the Qt Install Package.

For Slackware 14.0, enter:

```
> installpkg ./jvn-qt-5.7.1-slack14-runtime.tgz
```

NOTE: The final installation location for the revision should be /usr/lib/qt-5.7.1/.

For Slackware 14.2, enter:

```
> installpkg ./jvn-qt-5.9.0-slack14.2-x64-runtime.tgz
```

NOTE: The final installation location for the revision should be /usr/lib64/qt-5.9.0/.

2.2. Java Runtime Environment

The Java Runtime Environment (JRE) must be installed on each processor that will be running any component of the JVN Tool Suite.

- a. Log onto each processor as the root user.
- b. Copy the JRE Install Package into the /tmp directory.
- d. From the /tmp directory, uncompress and extract the JRE Install Package.

For Slackware 14.0, enter:

```
> gunzip jre-8u191-linux-i586.tar.gz
> tar -xvf jre-8u191-linux-i586.tar -C /usr/lib
```

For Slackware 14.2, enter:

```
> gunzip jre-8u191-linux-x64.tar.gz
> tar -xvf jre-8u191-linux-x64.tar -C /usr/lib64
```

2.3. Oracle Virtual Box

Oracle Virtual Box may be installed on the processor that will be running SDRR, if desired. It may be beneficial to have virtual machines configured as En Route Data Distribution Systems (EDDS) or NAS Enterprise Messaging Systems (NEMS).

- a. Log onto each processor where SDRR will run.
- b. As the root user, copy the VirtualBox-5.0.12-104815-Linux_x86.run Install Package into the /tmp directory.
- c. From the /tmp directory, extract the Install Package file, enter:

```
> ./VirtualBox-5.0.12-104815-Linux_x86.run install
```

- d. Install the Oracle_VM_Virtual_Extension_pack-5.0.12-104815a.vbox-extpack.

```
> ./Oracle_VM_VirtualBox_Extension_pack-5.0.12-104815a.vbox-extpack install
```

2.4. Weblogic Client Files

The Weblogic Client Files must be installed on each processor that will be running SDRR.

- a. Log onto each processor where SDRR will run.
- b. As the root user, copy the Weblogic Client Files into the /tmp directory.
- c. From the /tmp directory, extract the Install Package file, enter:

```
> tar -xvf weblogicClientFiles.tar -C /opt
```

2.5. JVN Tool Libraries

The JVN Tool Libraries must be installed on each processor that will be running any component of the JVN Tool Suite.

- a. Log onto each processor as the root user.
- b. Copy the JVN Libraries Install Package into the /tmp directory.
- c. From the /tmp directory, extract the Install Package files.

For Slackware 14.0, enter:

```
> installpkg ./libjvn-Slack14.0.tgz
```

For Slackware 14.2, enter:

```
> installpkg ./libjvn-Slack14.2.tgz
```

2.6. JVN Tool Suite

The JVN Tool Suite must be installed on each processor that will be running any component of the JVN Tool Suite.

- a. Log onto each processor as the root user.
- b. Copy the JVN Tools Install Package into the /tmp directory.
- c. From the /tmp directory, extract the Install Package files.

For Slackware 14.0, enter:

```
> installpkg ./jvn-slack14.0-10.4.6.tgz
```

For Slackware 14.2, enter:

```
> installpkg ./jvn-slack14.2-10.4.6.tgz
```

2.7. License Files

Each processor that will be running a component of the JVN Tool Suite, must have a license file installed for that particular component.

- a. Log onto each processor as the root user.
- b. Copy the appropriate license file(s) into the /etc directory.

3. Configuration

3.1. Create Subinterfaces

Network subinterfaces may be configured on the processor that will be running SDRR, if desired. It may be beneficial to have addition interfaces for communication with locally installed virtual machines.

- a. Log onto each processor where SDRR will run.
- b. As the root user, define the subinterface addresses, enter:

```
> cd /etc/rc.d  
> vi rc.subinterfaces
```

- c. Add a line for each subinterface in the following format:

```
ifconfig ethx:y aaa.bbb.ccc.ddd netmask 255.255.255.0
```

where x is the number of the Ethernet device, y is the number of the subinterface and aaa.bbb.ccc.ddd is the IP address of the new subinterface.

- d. Once all subinterfaces have been defined, enter:

```
:wq!
```

e. Ensure the `rc.subinterfaces` file is executable. If necessary, enter:

```
> chmod +x rc.subinterfaces
```

f. At the command line, enter:

```
> vi rc.local
```

g. Add the following lines:

```
if [ -x /etc/rc.d/rc.subinterfaces ]; then  
    . /etc/rc.d/rc.subinterfaces  
fi
```

h. Once finished, enter:

```
:wq!
```

i. At the command line, enter:

```
> ./rc.local
```

j. Verify that all subinterfaces were created; enter:

```
> ifconfig -a
```

k. Add all of the subinterface addresses into the hosts file. Enter:

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

Enter in all of the addresses defined in step c.

l. Once all subinterface addresses have been added, enter:

```
> :wq!
```

4. Acronyms

API	Application Program Interface
ARTCC	Air Route Traffic Control Center
ATC	Air Traffic Control
AViD	Airspace Visualization Display
CAS	Commercially Available Software
DataComm	Data Communications
DYSIM	Dynamic Simulation
EDDS	En Route Data Distribution System
ERAM	En Route Automation Modernization
FAA	Federal Aviation Administration
GSGT	Graphic Simulation Generation Tool
JRE	Java Runtime Environment
MIS	Metering Information Service
NAS	National Air Space
NEMS	NAS Enterprise Messaging System
RF	Radius-to-fix
RTCS	Release Time Coordination Service
RTM	Requirements Traceability Matrix
SDRR	Simulation Driver Radar Recorder
SMIF	Simulation Interface Support
STARS	Standard Terminal Automation Replacement System
TBFM	Time Based Flow Management

TFDM	Terminal Flight Data Manager
TRACON	Terminal Radar Approach Control
TSIM	TBFM Simulation
WJHTC	William J. Hughes Technical Center