# VMMC Installation Guide
# (Windows NT)

# Version 2.0

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# About this Document

Welcome to VMMC! This document describes how to install the VMMC software on a Windows NT PC cluster.

Users of VMMC are encouraged to join the email list used for VMMC announcements. Join the list to keep up with the latest VMMC developments. To join the email list, send a message to majordomo@cs.princeton.edu with "subscribe vmmc-announce youremail@yourcompany.com" in the body of the message. Email traffic is minimal.

We welcome input about this document or VMMC. Please send your comments or questions to vmmc-help@cs.princeton.edu.  For more information on The SHRIMP Project (including technical papers) please visit our web site at http://www.cs.princeton.edu/shrimp.

# Installation Procedure

This document is a step-by-step guide to installing the VMMC system software on a Windows NT cluster. Make sure that you are the administrator (or have administrator privileges) for the entire installation process.

## Phase 0: Pre-installation Checklist

Installing VMMC on a Windows NT cluster is a little tricky because NT must be configured in a specific way. For example, our test install on new out-of-the-box Dell PCs failed because the Dell's default NT configuration does not allow VMMC to work correctly. We had to reinstall NT (and Service Pack 3) in order for VMMC to work.

Before installing VMMC verify the following:

- You know the NT "administrator" password for the cluster machines.
  Or you have an account with administrator privileges enabled.

- The Windows NT Service Pack 3 (or higher) is installed.

- Verify that file sharing is configured and working properly. The easiest way to check is to attempt to share a folder. Using the Explorer, right-click on a folder and look for "share" in the menu. If "share" does not show up then there is a problem with the Window NT configuration. The easiest way to fix this problem *may* be to reinstall Windows. Ask your NT administrator for help.

- Make sure that the following two networking services are installed:

  - RPC Configuration
  - Server

  To check, right-click on "Network Neighborhood" then click on "Properties". Check that both services are installed. If not, add them and reboot.

## Phase 1: Set up the installation environment

This phase sets up the installation files in a shared folder. This allows all PCs in the cluster to access them for installation in Phase 2.

DO NOT INSTALL or EXECUTE ANY FILES IN THIS PHASE.

### Step 1.  Export a network shared folder

Create a temporary install folder `c:\temp\vmmcinst`. The folder must be exported (shared).
To share a folder simply right-click on it in the Windows Explorer and then select "share".

This folder can be created on any machine on the network (PC, file server, etc).
Do not use a VMMC machine for this shared folder (if possible).

WARNING: DO NOT NAME THIS FOLDER "VMMC".

### Step 2.  Copy the VMMC system installation program

Copy the VMMC system installation program (`vmmc_nt_2_0.zip`) to the shared folder and unzip it.

### Step 3.  Download UWIN

Download the AT&T Research's UWIN software from http://www.research.att.com/cgi-bin/access.cgi/as/vt/ext-software/www-ne-license.cgi?table.uwin_beta.binary. Make sure to download both:

>         (a) uwin_base
>
>         (b) uwin_perl

The UWIN package provides a UNIX interface for Windows NT. We use it for launching remote applications and scripts within the cluster. More information on UWIN is available at http://www.research.att.com/sw/tools/uwin.

### Step 4.  Prepare vmmc-hosts.txt (for VMMC)

The VMMC system needs to know the names of all the machines in the cluster. Edit the file called `vmmc-hosts.txt` in the shared folder. Add the name of each machine in the cluster, one per line. This is an sample file for a four node cluster whose machines are named `edge`, `bono`, `led`, and `zeppelin`:

```
# this is a sample vmmc-hosts.txt file
bono
edge
led
zeppelin
```

## Step 5.  Prepare .rhosts (for UWIN)

UWIN needs an .rhosts file to determine who is allowed to launch remote commands. Each entry in the .rhosts file specifies a host and userid pair that is allowed access. Access to the cluster machines is grouped into two sets:

    (a)  user "vmmc" for each cluster node

    (b)  any non-cluster user/host that needs remote access to the cluster.
          This is typically the set of users and hosts that will run applications from remote hosts.

A new user account, named vmmc, is created and used by VMMC on all the machines in the cluster. The password for this account is set to "vmmc". Feel free to change it to whatever you like, but remember that the password on all machines in the cluster must be the same.
NOTE: The vmmc account has administrative privileges.

```
# this is a sample .rhosts file
# each line is: host userid
# cluster nodes with "vmmc" account
bono     vmmc
edge     vmmc
led      vmmc
zeppelin vmmc
# non-cluster hosts and users
crete  snd
sade   snd
kitm   yuqun
```

## Phase 2: Install system software on each node in the cluster

On every node in the cluster you must perform the following three steps. The software for each step is already in the shared folder.

Login as Administrator (or equivalent) for all steps in this phase.

## Step 1.  Install VMMC system software

Begin the by installing the VMMC system software. Simply execute **setup.bat** in the shared folder.

## Step 2.  Install UWIN

Install the UWIN executables, first uwin_base and then uwin_perl.
You do not need to reboot after installing uwin_base.

## Step 3.  Reboot

Reboot the node and proceed to the next cluster node.

## *Phase 3: Acceptance Test*

As part of VMMC system installation, we include a two-node test program that measures ping-pong bandwidth and latency for various message sizes. The test program and the script that invokes it reside in the directory `%SystemRoot%\VMMC\test`. To run the test, do the following:

1. select two newly installed VMMC nodes, `hostname_1` and `hostname_2`

2. start the VMMC system on them (as described previously)

3. login to one of these two nodes using the VMMC account

4. invoke a command shell (DOS shell)

5. `CD %SystemRoot%\VMMC\test`

6. run the command as follows

   ```
   testvmmc.bat hostname_1 hostname_2
   ```
   ″

## *Phase 4: Install the VMMC SDK and test the cluster*

Select a development machine, preferably not a cluster node, and install the VMMC software development kit (`vmmc_sdk_2_0.zip`). The SDK contains test programs as well as instructions on how to test the cluster.

 Have fun!

The VMMC Team