radware

DefensePro VA
INSTALLATION AND MAINTENANCE GUIDE

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@author Vincent Rijmen <vincent.rijmen@esat.kuleuven.ac.be>

@author Antoon Bosselaers <antoon.bosselaers@esat.kuleuven.ac.be>

@author Paulo Barreto <paulo.barreto@terra.com.br>

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Optimierter ANSI C Code für den Rijndael cipher (jetzt AES)

@author Vincent Rijmen <vincent.rijmen@esat.kuleuven.ac.be>

@author Antoon Bosselaers <antoon.bosselaers@esat.kuleuven.ac.be>

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Safety Instructions

CAUTION

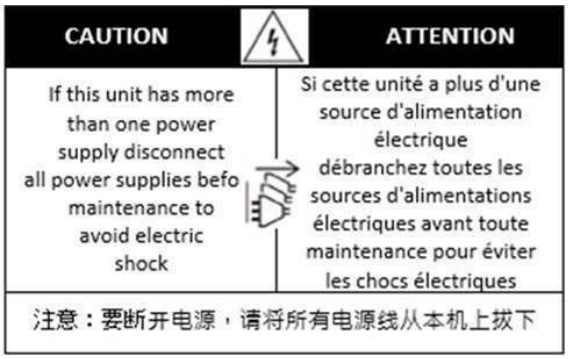
A readily accessible disconnect device shall be incorporated in the building installation wiring.

Due to the risks of electrical shock, and energy, mechanical, and fire hazards, any procedures that involve opening panels or changing components must be performed by qualified service personnel only.

To reduce the risk of fire and electrical shock, disconnect the device from the power line before removing cover or panels.

The following figure shows the caution label that is attached to Radware platforms with dual power supplies.

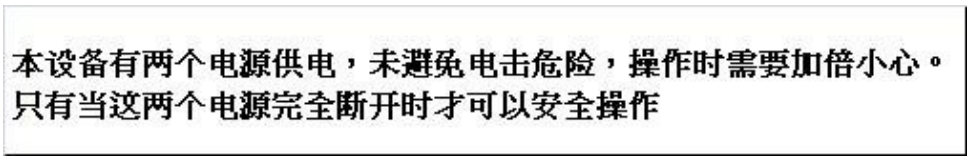
Figure 1: Electrical Shock Hazard Label



DUAL-POWER-SUPPLY-SYSTEM SAFETY WARNING IN CHINESE

The following figure is the warning for Radware platforms with dual power supplies.

Figure 2: Dual-Power-Supply-System Safety Warning in Chinese



Translation of Dual-Power-Supply-System Safety Warning in Chinese:

This unit has more than one power supply. Disconnect all power supplies before maintenance to avoid electric shock.

SERVICING

Do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. There are no serviceable parts inside the unit.

HIGH VOLTAGE

Any adjustment, maintenance, and repair of the opened instrument under voltage must be avoided as much as possible and, when inevitable, must be carried out only by a skilled person who is aware of the hazard involved.

Capacitors inside the instrument may still be charged even if the instrument has been disconnected from its source of supply.

GROUNDING

Before connecting this device to the power line, the protective earth terminal screws of this device must be connected to the protective earth in the building installation.

LASER

This equipment is a Class 1 Laser Product in accordance with IEC60825 - 1: 1993 + A1:1997 + A2:2001 Standard.

FUSES

Make sure that only fuses with the required rated current and of the specified type are used for replacement. The use of repaired fuses and the short-circuiting of fuse holders must be avoided. Whenever it is likely that the protection offered by fuses has been impaired, the instrument must be made inoperative and be secured against any unintended operation.

LINE VOLTAGE

Before connecting this instrument to the power line, make sure the voltage of the power source matches the requirements of the instrument. Refer to the Specifications for information about the correct power rating for the device.

48V DC-powered platforms have an input tolerance of 36-72V DC.

SPECIFICATION CHANGES

Specifications are subject to change without notice.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15B of the FCC Rules and EN55022 Class A, EN 55024; EN 61000-3-2; EN 61000-3-3; IEC 61000 4-2 to 4-6, IEC 61000 4-8 and IEC 61000-4-11For CE MARK Compliance. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user is required to correct the interference at his own expense.

SPECIAL NOTICE FOR NORTH AMERICAN USERS

For North American power connection, select a power supply cord that is UL Listed and CSA Certified 3 - conductor, [18 AWG], terminated in a molded on plug cap rated 125 V, [10 A], with a minimum length of 1.5m [six feet] but no longer than 4.5m...For European connection, select a power supply cord that is internationally harmonized and marked “<HAR>”, 3 - conductor, 0,75 mm2 minimum mm2 wire, rated 300 V, with a PVC insulated jacket. The cord must have a molded on plug cap rated 250 V, 3 A.

RESTRICT AREA ACCESS

The DC powered equipment should only be installed in a Restricted Access Area.

INSTALLATION CODES

This device must be installed according to country national electrical codes. For North America, equipment must be installed in accordance with the US National Electrical Code, Articles 110 - 16, 110 -17, and 110 -18 and the Canadian Electrical Code, Section 12.

INTERCONNECTION OF UNITS

Cables for connecting to the unit RS232 and Ethernet Interfaces must be UL certified type DP-1 or DP-2. (Note- when residing in non LPS circuit)

OVERCURRENT PROTECTION

A readily accessible listed branch-circuit over current protective device rated 15 A must be incorporated in the building wiring for each power input.

REPLACEABLE BATTERIES

If equipment is provided with a replaceable battery, and is replaced by an incorrect battery type, then an explosion may occur. This is the case for some Lithium batteries and the following is applicable:

- If the battery is placed in an **Operator Access Area**, there is a marking close to the battery or a statement in both the operating and service instructions.
- If the battery is placed elsewhere in the equipment, there is a marking close to the battery or a statement in the service instructions.

This marking or statement includes the following text warning:

CAUTION

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT BATTERY TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

Caution – To Reduce the Risk of Electrical Shock and Fire

1. This equipment is designed to permit connection between the earthed conductor of the DC supply circuit and the earthing conductor equipment. See Installation Instructions.
2. All servicing must be undertaken only by qualified service personnel. There are not user serviceable parts inside the unit.
3. DO NOT plug in, turn on or attempt to operate an obviously damaged unit.
4. Ensure that the chassis ventilation openings in the unit are NOT BLOCKED.
5. Replace a blown fuse ONLY with the same type and rating as is marked on the safety label adjacent to the power inlet, housing the fuse.
6. Do not operate the device in a location where the maximum ambient temperature exceeds 40°C/104°F.
7. Be sure to unplug the power supply cord from the wall socket BEFORE attempting to remove and/or check the main power fuse.
   CLASS 1 LASER PRODUCT AND REFERENCE TO THE MOST RECENT LASER STANDARDS IEC 60 825-1:1993 + A1:1997 + A2:2001 AND EN 60825-1:1994+A1:1996+ A2:2001

AC units for Denmark, Finland, Norway, Sweden (marked on product):

- Denmark - “Unit is class I - unit to be used with an AC cord set suitable with Denmark deviations. The cord includes an earthing conductor. The Unit is to be plugged into a wall socket outlet which is connected to a protective earth. Socket outlets which are not connected to earth are not to be used!”
- Finland - (Marking label and in manual) - “Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan”
- Norway (Marking label and in manual) - “Apparatet må tilkoples jordet stikkontakt”
- Unit is intended for connection to IT power systems for Norway only.
- Sweden (Marking label and in manual) - “Apparaten skall anslutas till jordat uttag.”

To connect the power connection:

1. Connect the power cable to the main socket, located on the rear panel of the device.
2. Connect the power cable to the grounded AC outlet.

CAUTION

Risk of electric shock and energy hazard. Disconnecting one power supply disconnects only one power supply module. To isolate the unit completely, disconnect all power supplies.

Instructions de sécurité

AVERTISSEMENT

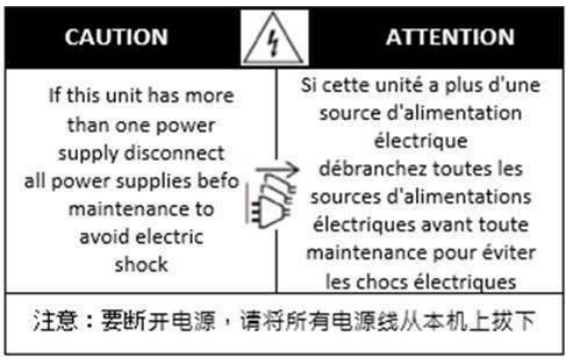
Un dispositif de déconnexion facilement accessible sera incorporé au câblage du bâtiment.

En raison des risques de chocs électriques et des dangers énergétiques, mécaniques et d'incendie, chaque procédure impliquant l'ouverture des panneaux ou le remplacement de composants sera exécutée par du personnel qualifié.

Pour réduire les risques d'incendie et de chocs électriques, déconnectez le dispositif du bloc d'alimentation avant de retirer le couvercle ou les panneaux.

La figure suivante montre l'étiquette d'avertissement apposée sur les plateformes Radware dotées de plus d'une source d'alimentation électrique.

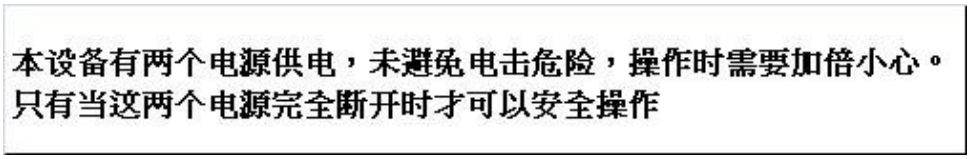
Figure 3: Étiquette d'avertissement de danger de chocs électriques



AVERTISSEMENT DE SÉCURITÉ POUR LES SYSTÈMES DOTÉS DE DEUX SOURCES D'ALIMENTATION ÉLECTRIQUE (EN CHINOIS)

La figure suivante représente l'étiquette d'avertissement pour les plateformes Radware dotées de deux sources d'alimentation électrique.

Figure 4: Avertissement de sécurité pour les systèmes dotes de deux sources d'alimentation électrique (en chinois)



Traduction de la Avertissement de sécurité pour les systèmes dotes de deux sources d'alimentation électrique (en chinois):

Cette unité est dotée de plus d'une source d'alimentation électrique. Déconnectez toutes les sources d'alimentation électrique avant d'entretenir l'appareil ceci pour éviter tout choc électrique.

ENTRETIEN

N'effectuez aucun entretien autre que ceux répertoriés dans le manuel d'instructions, à moins d'être qualifié en la matière. Aucune pièce à l'intérieur de l'unité ne peut être remplacée ou réparée.

HAUTE TENSION

Tout réglage, opération d'entretien et réparation de l'instrument ouvert sous tension doit être évité. Si cela s'avère indispensable, confiez cette opération à une personne qualifiée et consciente des dangers impliqués.

Les condensateurs au sein de l'unité risquent d'être chargés même si l'unité a été déconnectée de la source d'alimentation électrique.

MISE A LA TERRE

Avant de connecter ce dispositif à la ligne électrique, les vis de protection de la borne de terre de cette unité doivent être reliées au système de mise à la terre du bâtiment.

LASER

Cet équipement est un produit laser de classe 1, conforme à la norme IEC60825 - 1: 1993 + A1: 1997 + A2: 2001.

FUSIBLES

Assurez-vous que, seuls les fusibles à courant nominal requis et de type spécifié sont utilisés en remplacement. L'usage de fusibles réparés et le court-circuitage des porte-fusibles doivent être évités. Lorsqu'il est pratiquement certain que la protection offerte par les fusibles a été détériorée, l'instrument doit être désactivé et sécurisé contre toute opération involontaire.

TENSION DE LIGNE

Avant de connecter cet instrument à la ligne électrique, vérifiez que la tension de la source d'alimentation correspond aux exigences de l'instrument. Consultez les spécifications propres à l'alimentation nominale correcte du dispositif.

Les plateformes alimentées en 48 CC ont une tolérance d'entrée comprise entre 36 et 72 V CC.

MODIFICATIONS DES SPÉCIFICATIONS

Les spécifications sont sujettes à changement sans notice préalable.

Remarque: Cet équipement a été testé et déclaré conforme aux limites définies pour un appareil numérique de classe A, conformément au paragraphe 15B de la réglementation FCC et EN55022 Classe A, EN 55024, EN 61000-3-2; EN 61000-3-3; IEC 61000 4-2 to 4-6, IEC 61000 4-8, et IEC 61000-4-11, pour la marque de conformité de la CE. Ces limites sont fixées pour fournir une protection raisonnable contre les interférences nuisibles, lorsque l'équipement est utilisé dans un environnement commercial. Cet équipement génère, utilise et peut émettre des fréquences radio et, s'il n'est pas installé et utilisé conformément au manuel d'instructions, peut entraîner des interférences nuisibles aux communications radio. Le fonctionnement de cet équipement dans une zone résidentielle est susceptible de provoquer des interférences nuisibles, auquel cas l'utilisateur devra corriger le problème à ses propres frais.

NOTICE SPÉCIALE POUR LES UTILISATEURS NORD-AMÉRICAINS

Pour un raccordement électrique en Amérique du Nord, sélectionnez un cordon d'alimentation homologué UL et certifié CSA 3 - conducteur, [18 AWG], muni d'une prise moulée à son extrémité, de 125 V, [10 A], d'une longueur minimale de 1,5 m [six pieds] et maximale de 4,5m...Pour la connexion européenne, choisissez un cordon d'alimentation mondialement homologué et marqué "<HAR>", 3 - conducteur, câble de 0,75 mm2 minimum, de 300 V, avec une gaine en PVC isolée. La prise à l'extrémité du cordon, sera dotée d'un sceau moulé indiquant: 250 V, 3 A.

ZONE A ACCÈS RESTREINT

L'équipement alimenté en CC ne pourra être installé que dans une zone à accès restreint.

CODES D'INSTALLATION

Ce dispositif doit être installé en conformité avec les codes électriques nationaux. En Amérique du Nord, l'équipement sera installé en conformité avec le code électrique national américain, articles 110-16, 110 -17, et 110 -18 et le code électrique canadien, Section 12.

INTERCONNEXION DES UNÎTES

Les câbles de connexion à l'unité RS232 et aux interfaces Ethernet seront certifiés UL, type DP-1 ou DP-2. (Remarque- s'ils ne résident pas dans un circuit LPS)

PROTECTION CONTRE LES SURCHARGES.

Un circuit de dérivation, facilement accessible, sur le dispositif de protection du courant de 15 A doit être intégré au câblage du bâtiment pour chaque puissance consommée.

BATTERIES REMPLAÇABLES

Si l'équipement est fourni avec une batterie, et qu'elle est remplacée par un type de batterie incorrect, elle est susceptible d'exploser. C'est le cas pour certaines batteries au lithium, les éléments suivants sont donc applicables:

- Si la batterie est placée dans une zone d'accès opérateur, une marque est indiquée sur la batterie ou une remarque est insérée, aussi bien dans les instructions d'exploitation que d'entretien.
- Si la batterie est placée ailleurs dans l'équipement, une marque est indiquée sur la batterie ou une remarque est insérée dans les instructions d'entretien.

Cette marque ou remarque inclut l'avertissement textuel suivant:

AVERTISSEMENT

RISQUE D'EXPLOSION SI LA BATTERIE EST REMPLACÉE PAR UN MODÈLE INCORRECT. METTRE AU REBUT LES BATTERIES CONFORMÉMENT AUX INSTRUCTIONS.

Attention - Pour réduire les risques de chocs électriques et d'incendie

1. Cet équipement est conçu pour permettre la connexion entre le conducteur de mise à la terre du circuit électrique CC et l'équipement de mise à la terre. Voir les instructions d'installation.
2. Tout entretien sera entrepris par du personnel qualifié. Aucune pièce à l'intérieur de l'unité ne peut être remplacée ou réparée.
3. NE branchez pas, n'allumez pas ou n'essayez pas d'utiliser une unité manifestement endommagée.
4. Vérifiez que l'orifice de ventilation du châssis dans l'unité n'est PAS OBSTRUE.
5. Remplacez le fusible endommagé par un modèle similaire de même puissance, tel qu'indiqué sur l'étiquette de sécurité adjacente à l'arrivée électrique hébergeant le fusible.
6. Ne faites pas fonctionner l'appareil dans un endroit, où la température ambiante dépasse la valeur maximale autorisée. 40°C/104°F.
7. Débranchez le cordon électrique de la prise murale AVANT d'essayer de retirer et/ou de vérifier le fusible d'alimentation principal.

PRODUIT LASER DE CLASSE 1 ET RÉFÉRENCE AUX NORMES LASER LES PLUS RÉCENTES: IEC 60

825-1: 1993 + A1: 1997 + A2: 2001 ET EN 60825-1: 1994+A1: 1996+ A2: 2001

Unités à CA pour le Danemark, la Finlande, la Norvège, la Suède (indiqué sur le produit):

- Danemark - Unité de classe 1 - qui doit être utilisée avec un cordon CA compatible avec les déviations du Danemark. Le cordon inclut un conducteur de mise à la terre. L'unité sera branchée à une prise murale, mise à la terre. Les prises non-mises à la terre ne seront pas utilisées!
- Finlande (Étiquette et inscription dans le manuel) - Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan
- Norvège (Étiquette et inscription dans le manuel) - Apparatet må tilkoples jordet stikkontakt
- L'unité peut être connectée à un système électrique IT (en Norvège uniquement).
- Suède (Étiquette et inscription dans le manuel) - Apparaten skall anslutas till jordat uttag.

Pour brancher à l'alimentation électrique:

1. Branchez le câble d'alimentation à la prise principale, située sur le panneau arrière de l'unité.
2. Connectez le câble d'alimentation à la prise CA mise à la terre.

AVERTISSEMENT

Risque de choc électrique et danger énergétique. La déconnexion d'une source d'alimentation électrique ne débranche qu'un seul module électrique. Pour isoler complètement l'unité, débranchez toutes les sources d'alimentation électrique.

ATTENTION

Risque de choc et de danger électriques. Le débranchement d'une seule alimentation stabilisée ne débranche qu'un module "Alimentation Stabilisée". Pour Isoler complètement le module en cause, il faut débrancher toutes les alimentations stabilisées.

Attention: Pour Réduire Les Risques d'Électrocution et d'Incendie

1. Toutes les opérations d'entretien seront effectuées UNIQUEMENT par du personnel d'entretien qualifié. Aucun composant ne peut être entretenu ou remplacée par l'utilisateur.
2. NE PAS connecter, mettre sous tension ou essayer d'utiliser une unité visiblement défectueuse.
3. Assurez-vous que les ouvertures de ventilation du châssis NE SONT PAS OBSTRUÉES.
4. Remplacez un fusible qui a sauté SEULEMENT par un fusible du même type et de même capacité, comme indiqué sur l'étiquette de sécurité proche de l'entrée de l'alimentation qui contient le fusible.
5. NE PAS UTILISER l'équipement dans des locaux dont la température maximale dépasse 40 degrés Centigrades.
6. Assurez vous que le cordon d'alimentation a été déconnecté AVANT d'essayer de l'enlever et/ou vérifier le fusible de l'alimentation générale.

Sicherheitsanweisungen

VORSICHT

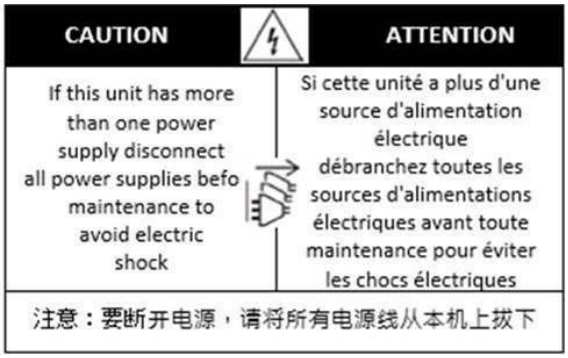
Die Elektroinstallation des Gebäudes muss ein unverzüglich zugängliches Stromunterbrechungsgerät integrieren.

Aufgrund des Stromschlagrisikos und der Energie-, mechanische und Feuergefahr dürfen Vorgänge, in deren Verlauf Abdeckungen entfernt oder Elemente ausgetauscht werden, ausschließlich von qualifiziertem Servicepersonal durchgeführt werden.

Zur Reduzierung der Feuer- und Stromschlaggefahr muss das Gerät vor der Entfernung der Abdeckung oder der Paneele von der Stromversorgung getrennt werden.

Folgende Abbildung zeigt das VORSICHT-Etikett, das auf die Radware-Plattformen mit Doppelspeisung angebracht ist.

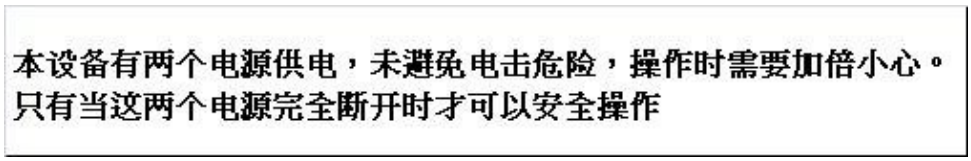
Figure 5: Warnetikett Stromschlaggefahr



SICHERHEITSHINWEIS IN CHINESISCHER SPRACHE FÜR SYSTEME MIT DOPPELSPEISUNG

Die folgende Abbildung ist die Warnung für Radware-Plattformen mit Doppelspeisung.

Figure 6: Sicherheitshinweis in chinesischer Sprache für Systeme mit Doppelspeisung



Übersetzung von Sicherheitshinweis in chinesischer Sprache für Systeme mit Doppelspeisung:

Die Einheit verfügt über mehr als eine Stromversorgungsquelle. Ziehen Sie zur Verhinderung von Stromschlag vor Wartungsarbeiten sämtliche Stromversorgungsleitungen ab.

WARTUNG

Führen Sie keinerlei Wartungsarbeiten aus, die nicht in der Betriebsanleitung angeführt sind, es sei denn, Sie sind dafür qualifiziert. Es gibt innerhalb des Gerätes keine wartungsfähigen Teile.

HOCHSPANNUNG

Jegliche Einstellungs-, Instandhaltungs- und Reparaturarbeiten am geöffneten Gerät unter Spannung müssen so weit wie möglich vermieden werden. Sind sie nicht vermeidbar, dürfen sie ausschließlich von qualifizierten Personen ausgeführt werden, die sich der Gefahr bewusst sind.

Innerhalb des Gerätes befindliche Kondensatoren können auch dann noch Ladung enthalten, wenn das Gerät von der Stromversorgung abgeschnitten wurde.

ERDUNG

Bevor das Gerät an die Stromversorgung angeschlossen wird, müssen die Schrauben der Erdungsleitung des Gerätes an die Erdung der Gebäudeverkabelung angeschlossen werden.

LASER

Dieses Gerät ist ein Laser-Produkt der Klasse 1 in Übereinstimmung mit IEC60825 - 1: 1993 + A1:1997 + A2:2001 Standard.

SICHERUNGEN

Vergewissern Sie sich, dass nur Sicherungen mit der erforderlichen Stromstärke und der angeführten Art verwendet werden. Die Verwendung reparierter Sicherungen sowie die Kurzschließung von Sicherungsfassungen muss vermieden werden. In Fällen, in denen wahrscheinlich ist, dass der von den Sicherungen gebotene Schutz beeinträchtigt ist, muss das Gerät abgeschaltet und gegen unbeabsichtigten Betrieb gesichert werden.

LEITUNGSSPANNUNG

Vor Anschluss dieses Gerätes an die Stromversorgung ist zu gewährleisten, dass die Spannung der Stromquelle den Anforderungen des Gerätes entspricht. Beachten Sie die technischen Angaben bezüglich der korrekten elektrischen Werte des Gerätes.

Plattformen mit 48 V DC verfügen über eine Eingangstoleranz von 36-72 V DC.

ÄNDERUNGEN DER TECHNISCHEN ANGABEN

Änderungen der technischen Spezifikationen bleiben vorbehalten.

Hinweis: Dieses Gerät wurde geprüft und entspricht den Beschränkungen von digitalen Geräten der Klasse 1 gemäß Teil 15B FCC-Vorschriften und EN55022 Klasse A, EN55024; EN 61000-3-2; EN; IEC 61000 4-2 to 4-6, IEC 61000 4-8 und IEC 61000-4- 11 für Konformität mit der CE-Bezeichnung. Diese Beschränkungen dienen dem angemessenen Schutz vor schädlichen Interferenzen bei Betrieb des Gerätes in kommerziellem Umfeld. Dieses Gerät erzeugt, verwendet und strahlt elektromagnetische Hochfrequenzstrahlung aus. Wird es nicht entsprechend den Anweisungen im Handbuch montiert und benutzt, könnte es mit dem Funkverkehr interferieren und ihn beeinträchtigen. Der Betrieb dieses Gerätes in Wohnbereichen wird höchstwahrscheinlich zu schädlichen Interferenzen führen. In einem solchen Fall wäre der Benutzer verpflichtet, diese Interferenzen auf eigene Kosten zu korrigieren.

BESONDERER HINWEIS FÜR BENUTZER IN NORDAMERIKA

Wählen Sie für den Netzstromanschluss in Nordamerika ein Stromkabel, das in der UL aufgeführt und CSA-zertifiziert ist 3 Leiter, [18 AWG], endend in einem gegossenen Stecker, für 125 V, [10 A], mit einer Mindestlänge von 1,5 m [sechs Fuß], doch nicht länger als 4,5 m. Für europäische Anschlüsse verwenden Sie ein international harmonisiertes, mit “<HAR>” markiertes Stromkabel, mit 3 Leitern von mindestens 0,75 mm2, für 300 V, mit PVC-Umkleidung. Das Kabel muss in einem gegossenen Stecker für 250 V, 3 A enden.

BEREICH MIT EINGESCHRÄNKTEM ZUGANG

Das mit Gleichstrom betriebene Gerät darf nur in einem Bereich mit eingeschränktem Zugang montiert werden.

INSTALLATIONSCODES

Dieses Gerät muss gemäß der landesspezifischen elektrischen Codes montiert werden. In Nordamerika müssen Geräte entsprechend dem US National Electrical Code, Artikel 110 - 16, 110 - 17 und 110 - 18, sowie dem Canadian Electrical Code, Abschnitt 12, montiert werden. VERKOPPLUNG VON GERÄTEN Kabel für die Verbindung des Gerätes mit RS232- und Ethernet- müssen UL-zertifiziert und vom Typ DP-1 oder DP-2 sein. (Anmerkung: bei Aufenthalt in einem nicht-LPS-Stromkreis)

ÜBERSTROMSCHUTZ

Ein gut zugänglicher aufgeführter Überstromschutz mit Abzweigstromkreis und 15 A Stärke muss für jede Stromeingabe in der Gebäudeverkabelung integriert sein.

AUSTAUSCHBARE BATTERIEN

Wird ein Gerät mit einer austauschbaren Batterie geliefert und für diese Batterie durch einen falschen Batterietyp ersetzt, könnte dies zu einer Explosion führen. Dies trifft zu für manche Arten von Lithiumsbatterien zu, und das folgende gilt es zu beachten:

- Wird die Batterie in einem Bereich für Bediener eingesetzt, findet sich in der Nähe der Batterie eine Markierung oder Erklärung sowohl im Betriebshandbuch als auch in der Wartungsanleitung.
- Ist die Batterie an einer anderen Stelle im Gerät eingesetzt, findet sich in der Nähe der Batterie eine Markierung oder einer Erklärung in der Wartungsanleitung.

Diese Markierung oder Erklärung enthält den folgenden Warntext:

VORSICHT

EXPLOSIONSGEFAHR, FALLS BATTERIE DURCH EINEN FALSCHEN BATTERIETYP ERSETZT WIRD. GEBRAUCHTE BATTERIEN DEN ANWEISUNGEN ENTSPRECHEND ENTSORGEN.

- Denmark - “Unit is class I - mit Wechselstromkabel benutzen, dass für die Abweichungen in Dänemark eingestellt ist. Das Kabel ist mit einem Erdungsdraht versehen. Das Kabel wird in eine geerdete Wandsteckdose angeschlossen. Keine Steckdosen ohne Erdungsleitung verwenden!”
- Finland - (Markierungsetikett und im Handbuch) - Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan
- Norway - (Markierungsetikett und im Handbuch) - Apparatet må tilkoples jordet stikkontakt Ausschließlich für Anschluss an IT-Netzstromsysteme in Norwegen vorgesehen
- Sweden - (Markierungsetikett und im Handbuch) - Apparaten skall anslutas till jordat uttag.

Anschluss des Stromkabels:

1. Schließen Sie das Stromkabel an den Hauptanschluss auf der Rückseite des Gerätes an.
2. Schließen Sie das Stromkabel an den geerdeten Wechselstromanschluss an.

VORSICHT

Stromschlag- und Energiegefahr Die Trennung einer Stromquelle trennt nur ein Stromversorgungsmodul von der Stromversorgung. Um das Gerät komplett zu isolieren, muss es von der gesamten Stromversorgung getrennt werden.

Vorsicht - Zur Reduzierung der Stromschlag- und Feuergefahr

1. Dieses Gerät ist dazu ausgelegt, die Verbindung zwischen der geerdeten Leitung des Gleichstromkreises und dem Erdungsleiter des Gerätes zu ermöglichen. Siehe Montageanleitung.
2. Wartungsarbeiten jeglicher Art dürfen nur von qualifiziertem Servicepersonal ausgeführt werden. Es gibt innerhalb des Gerätes keine vom Benutzer zu wartenden Teile.
3. Versuchen Sie nicht, ein offensichtlich beschädigtes Gerät an den Stromkreis anzuschließen, einzuschalten oder zu betreiben.
4. Vergewissern Sie sich, dass sie Lüftungsöffnungen im Gehäuse des Gerätes NICHT BLOCKIERT SIND.
5. Ersetzen Sie eine durchgebrannte Sicherung ausschließlich mit dem selben Typ und von der selben Stärke, die auf dem Sicherheitsetikett angeführt sind, das sich neben dem Stromkabelanschluss, am Sicherungsgehäuse.
6. Betreiben Sie das Gerät nicht an einem Standort, an dem die Höchsttemperatur der Umgebung 40°C überschreitet.
7. Vergewissern Sie sich, das Stromkabel aus dem Wandstecker zu ziehen, BEVOR Sie die Hauptsicherung entfernen und/oder prüfen.

Electromagnetic-Interference Statements

The following statements are presented in English, French, and German.

Electromagnetic-Interference Statements

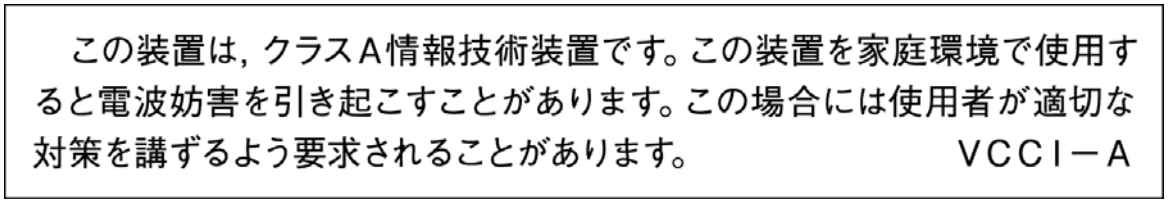
SPECIFICATION CHANGES

Specifications are subject to change without notice.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15B of the FCC Rules and EN55022 Class A, EN 55024; EN 61000-3-2; EN 61000-3-3; IEC 61000 4-2 to 4-6, IEC 61000 4-8 and IEC 61000-4-11For CE MARK Compliance. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user is required to correct the interference at his own expense.

VCCI ELECTROMAGNETIC-INTERFERENCE STATEMENTS

Figure 7: Statement for Class A VCCI-certified Equipment



Translation of Statement for Class A VCCI-certified Equipment:

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may occur, in which case, the user may be required to take corrective actions.

Install and use the equipment according to the instruction manual.

KCC KOREA

Figure 8: KCC—Korea Communications Commission Certificate of Broadcasting and Communication Equipment

Figure 9: Statement for Class A KCC-certified Equipment in Korean

이 기기는 업무용(A급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.

Translation of Statement for Class A KCC-certified Equipment in Korean:

This equipment is Industrial (Class A) electromagnetic wave suitability equipment and seller or user should take notice of it, and this equipment is to be used in the places except for home.

BSMI

Figure 10: Statement for Class A BSMI-certified Equipment

這是甲類的資訊產品，在居住的環境使用中時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Translation of Statement for Class A BSMI-certified Equipment:

This is a Class A product, in use in a residential environment, it may cause radio interference in which case the user will be required to take adequate measures.

Déclarations sur les Interférences Électromagnétiques

MODIFICATIONS DES SPÉCIFICATIONS

Les spécifications sont sujettes à changement sans notice préalable.

Remarque: Cet équipement a été testé et déclaré conforme aux limites définies pour un appareil numérique de classe A, conformément au paragraphe 15B de la réglementation FCC et EN55022 Classe A, EN 55024, EN 61000-3-2; EN 61000-3-3; IEC 61000 4-2 to 4-6, IEC 61000 4-8, et IEC 61000-4-11, pour la marque de conformité de la CE. Ces limites sont fixées pour fournir une protection raisonnable contre les interférences nuisibles, lorsque l'équipement est utilisé dans un environnement commercial. Cet équipement génère, utilise et peut émettre des fréquences radio et, s'il n'est pas installé et utilisé conformément au manuel d'instructions, peut entraîner des interférences nuisibles aux communications radio. Le fonctionnement de cet équipement dans une zone résidentielle est susceptible de provoquer des interférences nuisibles, auquel cas l'utilisateur devra corriger le problème à ses propres frais.

DÉCLARATIONS SUR LES INTERFÉRENCES ÉLECTROMAGNÉTIQUES VCCI

Figure 11: Déclaration pour l'équipement de classe A certifié VCCI

この装置は，クラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。 VCCI－A

Traduction de la Déclaration pour l'équipement de classe A certifié VCCI:

Il s'agit d'un produit de classe A, basé sur la norme du Voluntary Control Council for Interference by Information Technology Equipment (VCCI). Si cet équipement est utilisé dans un environnement domestique, des perturbations radioélectriques sont susceptibles d'apparaître. Si tel est le cas, l'utilisateur sera tenu de prendre des mesures correctives.

Installez et utilisez l'équipement selon le manuel d'instructions.

KCC Corée

Figure 12: KCC—Certificat de la commission des communications de Corée pour les equipements de radiodiffusion et communication.

Figure 13: Déclaration pour l'équipement de classe A certifié KCC en langue coréenne

이 기기는 업무용(A급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.

Translation de la Déclaration pour l'équipement de classe A certifié KCC en langue coréenne:

Cet équipement est un matériel (classe A) en adéquation aux ondes électromagnétiques et le vendeur ou l'utilisateur doit prendre cela en compte. Ce matériel est donc fait pour être utilisé ailleurs qu' á la maison.

BSMI

Figure 14: Déclaration pour l'équipement de classe A certifié BSMI

這是甲類的資訊產品，在居住的環境使用中時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Translation de la Déclaration pour l'équipement de classe A certifié BSMI:

Il s'agit d'un produit de Classe A; utilisé dans un environnement résidentiel il peut provoquer des interférences, l'utilisateur devra alors prendre les mesures adéquates.

Erklärungen zu Elektromagnetischer Interferenz

ÄNDERUNGEN DER TECHNISCHEN ANGABEN

Änderungen der technischen Spezifikationen bleiben vorbehalten.

Hinweis: Dieses Gerät wurde geprüft und entspricht den Beschränkungen von digitalen Geräten der Klasse 1 gemäß Teil 15B FCC-Vorschriften und EN55022 Klasse A, EN55024; EN 61000-3-2; EN; IEC 61000 4-2 to 4-6, IEC 61000 4-8 und IEC 61000-4- 11 für Konformität mit der CE-Bezeichnung. Diese Beschränkungen dienen dem angemessenen Schutz vor schädlichen Interferenzen bei Betrieb des Gerätes in kommerziellem Umfeld. Dieses Gerät erzeugt, verwendet und strahlt elektromagnetische Hochfrequenzstrahlung aus. Wird es nicht entsprechend den Anweisungen im Handbuch montiert und benutzt, könnte es mit dem Funkverkehr interferieren und ihn beeinträchtigen. Der Betrieb dieses Gerätes in Wohnbereichen wird höchstwahrscheinlich zu schädlichen Interferenzen führen. In einem solchen Fall wäre der Benutzer verpflichtet, diese Interferenzen auf eigene Kosten zu korrigieren.

ERKLÄRUNG DER VCCI ZU ELEKTROMAGNETISCHER INTERFERENZ

Figure 15: Erklärung zu VCCI-zertifizierten Geräten der Klasse A

この装置は，クラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。 VCCI－A

Übersetzung von Erklärung zu VCCI-zertifizierten Geräten der Klasse A:

Dies ist ein Produkt der Klasse A gemäß den Normen des Voluntary Control Council for Interference by Information Technology Equipment (VCCI). Wird dieses Gerät in einem Wohnbereich benutzt, können elektromagnetische Störungen auftreten. In einem solchen Fall wäre der Benutzer verpflichtet, korrigierend einzugreifen.

Montieren und benutzen Sie das Gerät laut Anweisungen im Benutzerhandbuch.

KCC KOREA

Figure 16: KCC—Korea Communications Commission Zertifikat für Rundfunk-und Nachrichtentechnik

Figure 17: Erklärung zu KCC-zertifizierten Geräten der Klasse A

이 기기는 업무용(A급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.

Übersetzung von Erklärung zu KCC-zertifizierten Geräten der Klasse A:

Verkäufer oder Nutzer sollten davon Kenntnis nehmen, daß dieses Gerät der Klasse A für industriell elektromagnetische Wellen geeignete Geräten angehört und dass diese Geräte nicht für den heimischen Gebrauch bestimmt sind.

BSMI

Figure 18: Erklärung zu BSMI-zertifizierten Geräten der Klasse A

這是甲類的資訊產品，在居住的環境使用中時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Übersetzung von Erklärung zu BSMI-zertifizierten Geräten der Klasse A:

Dies ist ein Class A Produkt, bei Gebrauch in einer Wohnumgebung kann es zu Funkstörungen kommen, in diesem Fall ist der Benutzer verpflichtet, angemessene Maßnahmen zu ergreifen.

Altitude and Climate Warning

Note: This warning only applies to The People's Republic of China.

1. 对于在非热带气候条件下运行的设备而言， Tma：为制造商规范允许的最大环境温度，或者为 25°C，采用两者中的较大者。
2. 关于在海拔不超过 2000m 或者在非热带气候地区使用的设备，附加警告要求如下：

关于在海拔不超过 2000m 的地区使用的设备，必须在随时可见的位置处粘贴包含如下内容或者类似用语的警告标记、或者附件 DD 中的符号。

“只可在海拔不超过 2000m 的位置使用。”

关于在非热带气候地区使用的设备，必须在随时可见的位置处粘贴包含如下内容的警告标记：

“只可在非热带气候地区使用。”

附件 DD：有关新安全警告标记的说明。

DD.1 海拔警告标记

标记含义：设备的评估仅基于 2000m 以下的海拔高度，因此设备只适用于该运行条件。如果在海拔超过 2000m 的位置使用设备，可能会存在某些安全隐患。

DD.2 气候警告标记

标记含义：设备的评估仅基于温带气候条件，因此设备只适用于该运行条件。如果在热带气候地区使用设备，可能会存在某些安全隐患。

Document Conventions

The following describes the conventions and symbols that this guide uses:

Item	Description	Description	Beschreibung
 **Example**	An example scenario	Un scénario d'exemple	Ein Beispielszenarium
 **Caution:**	Possible damage to equipment, software, or data	Endommagement possible de l'équipement, des données ou du logiciel	Mögliche Schäden an Gerät, Software oder Daten
 **Note:**	Additional information	Informations complémentaires	Zusätzliche Informationen
 **To**	A statement and instructions	Références et instructions	Eine Erklärung und Anweisungen
 **Tip:**	A suggestion or workaround	Une suggestion ou solution	Ein Vorschlag oder eine Umgehung
 **Warning:**	Possible physical harm to the operator	Blessure possible de l'opérateur	Verletzungsgefahr des Bedieners
 **IPv6 Ready**	Can use IPv6 (128-bit addresses) as well as IPv4 (32-bit addresses)	Peut utiliser IPv6 (adresses 128-bit,) ainsi que IPv4 (adresses 32-bit)	Kann sowohl IPv6 (128-Bit Adressen) als auch IPv4 (32-Bit Adressen) verwenden

TABLE OF CONTENTS

CHAPTER 1 – PREFACE

This guide describes the installation process and initial configuration for DefensePro VA on a KVM or a VMware hypervisor.

Who Should Use This Book

This book is intended for network and system administrators engaged in installing, configuring and maintaining their network environment. It assumes that you are familiar with Ethernet concepts, IT virtualization concepts, and the process of network appliance installations.

How This Book Is Organized

This book contains the following chapters and appendixes:

- DefensePro VA Installation and Configuration, page 31—describes how to install and configure DefensePro VA.
- Maintenance and Software Upgrade, page 69—describes how to maintain, upgrade and recover DefensePro VA.
- DefensePro VA Recovery and License Migration Procedure, page 71—describes how to recover DefensePro VA that failed.
- Configuring DefensePro VA in PCI Passthrough Mode, page 75—describes how to configure DefensePro VA in passthrough mode.

CHAPTER 2 – DEFENSEPRO VA INSTALLATION AND CONFIGURATION

DefensePro VA is a virtual appliance running on server virtualization infrastructure. The hypervisor abstracts the underlining CPU, memory, network and storage resources and runs fully functional DefensePro VA instances, each of which delivers DefensePro functionality just like a dedicated physical appliance. Each DefensePro VA instance contains a complete and separate environment or resources, configuration and management.

This chapter describes the installation and configuration instructions for DefensePro VA and includes the following sections:

Minimum Requirements

The following table details the minimum hardware requirements for DefensePro VA configuration:

Table 1: DefensePro VA Minimum Requirements

vCPU	GB RAM	GB Disk Space	Notes
2-16	4 GB per vCPU + 5 GB	10 GB	One vCPU is allocated for management and the other vCPUs are allocated for traffic handling.

Supported Hardware

DefensePro VA is supported only on the following Intel server-grade processors:

- Westmere
- Sandy-bridge
- Ivy-bridge
- Haswell
- Broadwell
- Intel Skylake

The following NICs are supported for PCI passthrough mode:

- Intel® Ethernet Server Adapter X520, 10 GbE
- Intel® Ethernet Controller XL710, 40 GbE

DefensePro VA in PCI passthrough was tested on the following servers:

- Dell R720
- Cisco UCS C240-M3

- HP DL380 Gen 8

Obtaining the Software

To obtain the software package

1. Go to https://portals.radware.com/Customer/Home/ and log in if prompted.

   Note: You must have a username and password before attempting to download a software update. If you do not have a username and password, click **My Account** and then click **Register**.

2. Under **My Updates > Software Releases**, download the DefensePro VA package.

DefensePro VA for KVM Installation and Configuration

To set up DefensePro VA for KVM, you must first obtain the DefensePro VA software package from the Radware portal. It includes the following topics:

Prerequisites

- DefensePro VA supports PCI passthrough mode only. You should first associate the physical ports of the host server (PCI addresses) with the VM running DefensePro VA. For details, refer to Configuring DefensePro VA in PCI Passthrough Mode, page 75.
- The following hosts are supported:
  - Ubuntu 16.04
  - KVM host kernel minimum version: 3.19
- The KVM host should have the following packages and tools installed:
  - QEMU 2.0.0
  - libvirt version v1.2.2

DefensePro VA for KVM Deployment

Before deploying the package, ensure that you have previously defined at least two interfaces:

- The first interface is for internal Radware support usage and is not exposed to the network. You should not use this interface unless explicitly requested by Radware Technical Support.
- The second interface is for DefensePro VA management.

Note: For VirtIO, you need to define two data interfaces (two bridge for data), in addition to the management bridge.

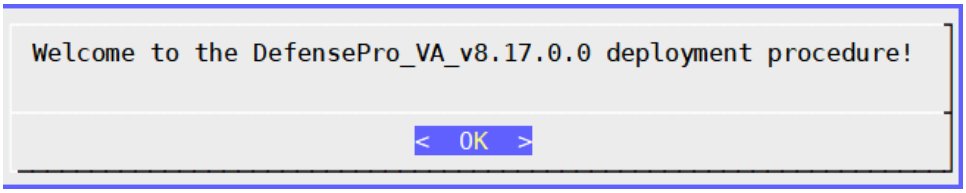
To add a bridge, use the Linux command: **sudo brctl addbr mng**

To attach a physical NIC to the bridge, use the command: **sudo brctl addif mng p2p1**

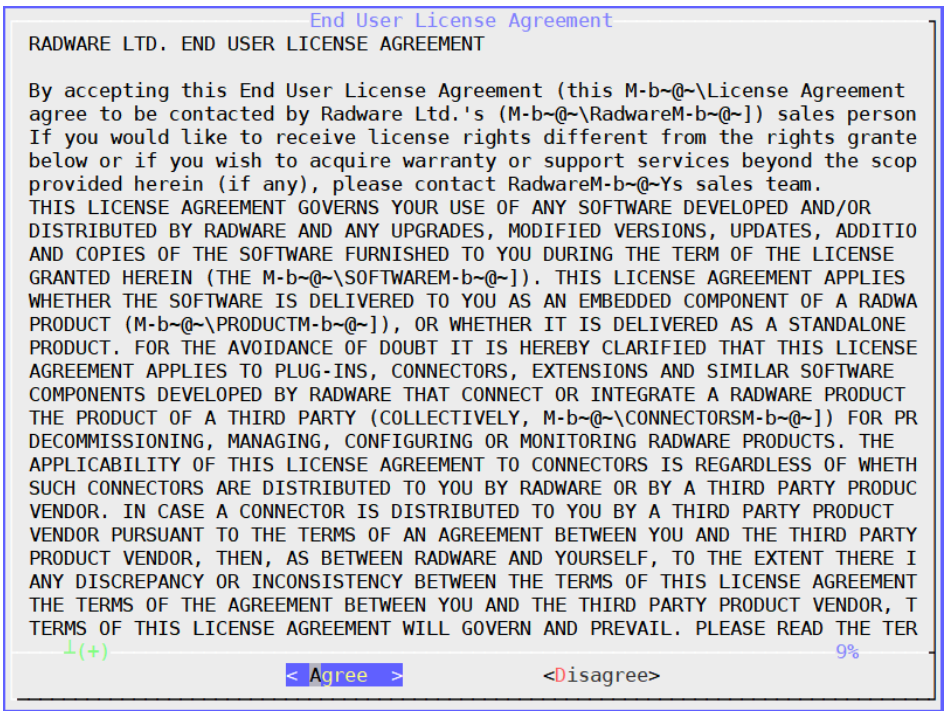
To deploy the package

1. Download and extract the installation file (for example, DefensePro_VA_8_17_00.tgz) into a local directory on the host where the hypervisor is located.
2. Locate the folder to where the installation file was extracted.

   The deployer file is located at /DefensePro_VA_v8.17.0.0/install/x86_64/bin/
3. Run the deployer file by typing **./deployer**.

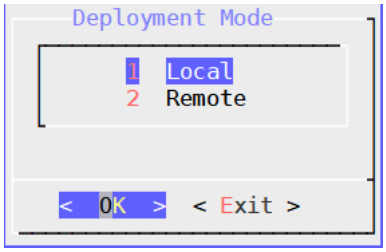


4. For the licensing agreement, click **Agree**.

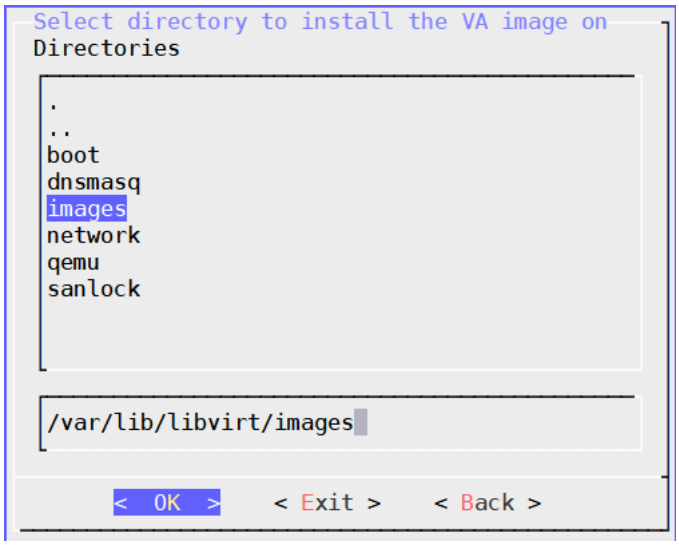


5. Select the deployment mode, either **local** or **remote**, and click **OK**.

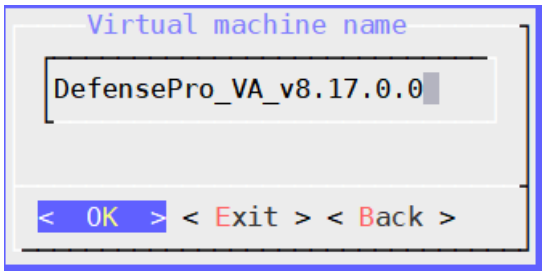
   Local deployment mode is installed on the machine; with remote mode, you can choose where to install the machine. In this document, we describe local deployment mode only.



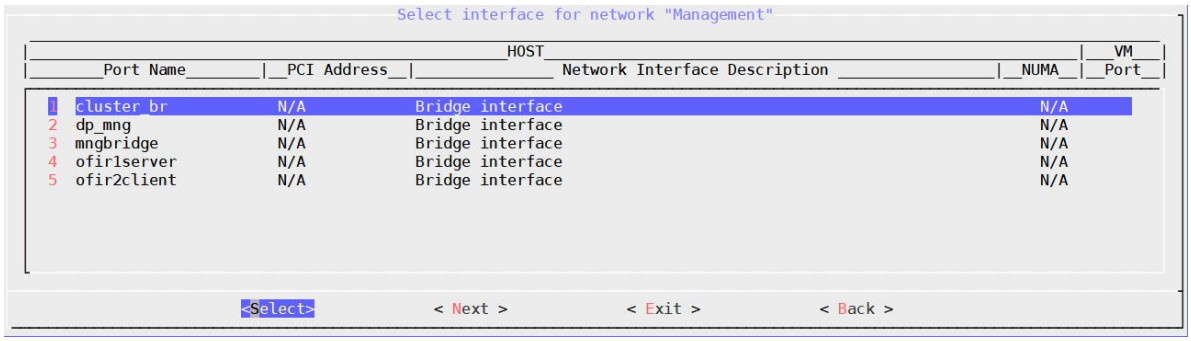
6. Select the directory to where DefensePro VA is to be installed (default /var/lib/libvirt/images).



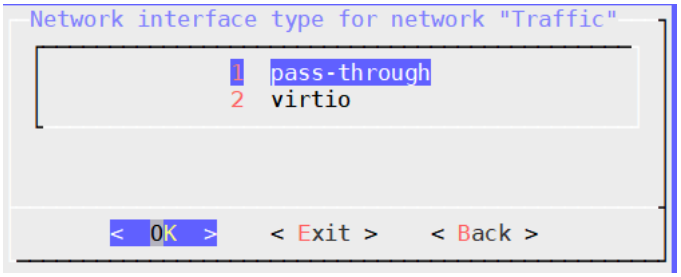
7. Set the name (or accept the default name) of DefensePro VA.



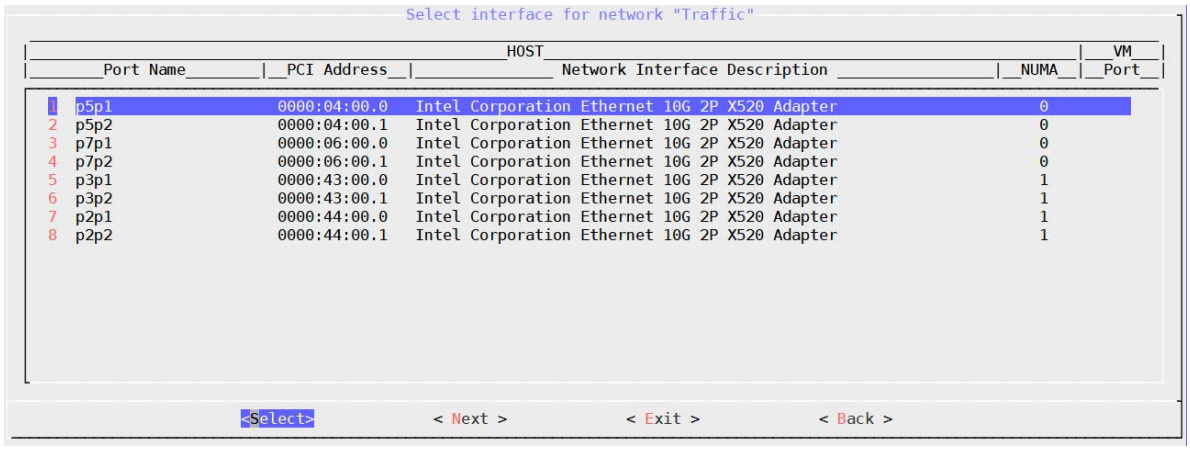
8. From the list shown, select two previously-defined bridge interfaces for network management and click **OK**.



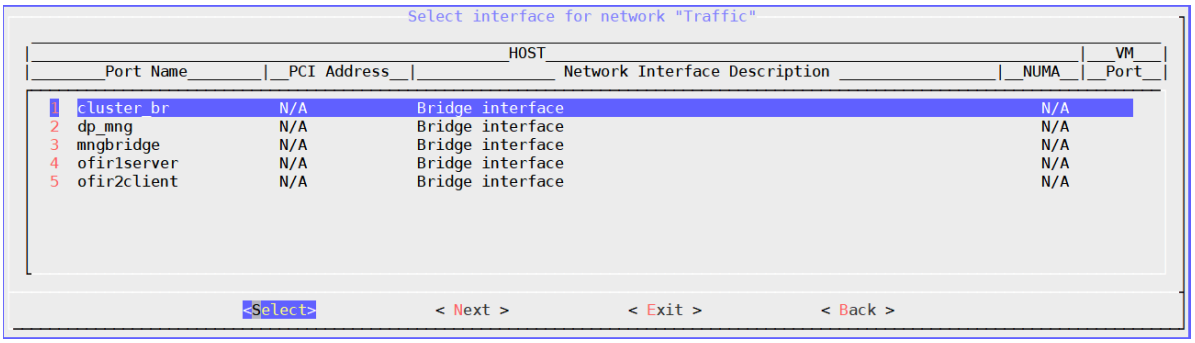
9. Set to **Passthrough** or **VirtIO** mode, and click **OK**.



10. From the list of available interfaces,
for **Passthrough** mode, select two interface ports (NICs) for the network (data) traffic,



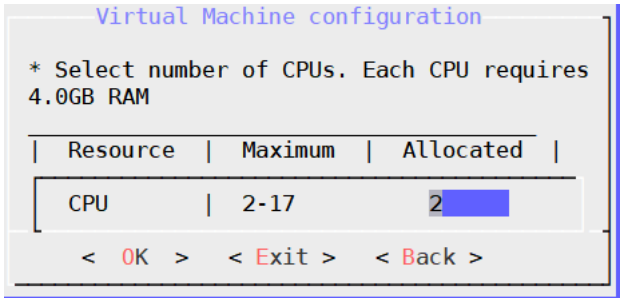
for **VirtIO** mode, select two bridge interfaces.



Notes:

- Select NICs of the model **Intel Ethernet Server Adapter X520, 10 GbE** or **Intel Ethernet Controller XL710, 40 GbE**.
- For the best performance, if the vCPU fits into a single NUMA (if the number of vCPUs are less than or equal to the number of cores in a single NUMA) Radware recommends assigning the two NICs to the same NUMA.
- All 10G ports of an Intel Niantic NIC must be assigned to the DefensePro VA virtual machine. Assigning only some of the available ports to the VM results in the VM failing to run.

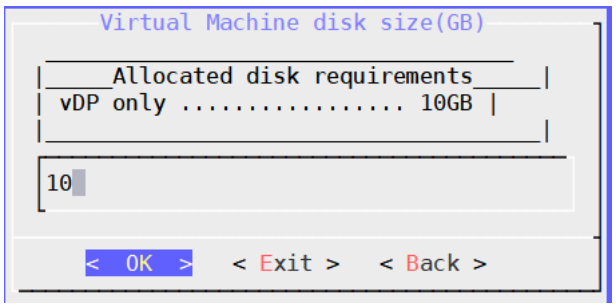
11. For VM configuration and to allocate resources, enter the number of CPUs.
(For **VirtIO** mode, a maximum of two CPUs should be allocated.)



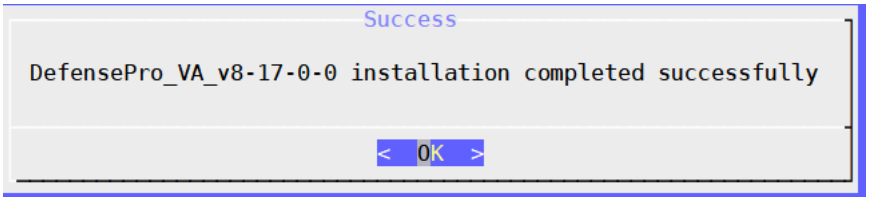
Notes:

- The required amount of memory is automatically calculated and defined.
- Use the TAB key to navigate between **OK**, **Exit** and **Back**.

12. The VM NUMA configuration displays, detailing the vCPU, NUMA and number of the physical CPU for each of the defined interfaces.
13. The VM disk size is determined. Click **OK**.



14. Click **Install**.



Note: When DefensePro VA for KVM is installed through a libvirt/virsh deployment, a virtual serial line or virsh console to the serial line is used instead of the usual TTY. Therefore, you should switch to a serial console if you are using a GUI-based framework. If you attempt to use a standard TTY, the line is dropped and the prompt may freeze.

Note: When installing DefensePro VA on a remote machine, the sshfs utility must be installed on the host server. It uses FUSE kernel facilities and ssh tunneling for working with a remote virtual disk. To install the sshfs package on an Ubuntu host, enter the following command:

```
sudo apt-get install sshfs -y
```

Optimizing the VM for Best DefensePro VA Performance

The DefensePro VA installation wizard optimizes the VM configuration to achieve the best performance. If the VM configuration running DefensePro VA was changed after DefensePro VA was already created by the deployer (such as a change in the number of vCPUs of the VM, or a change in the number of vCPUs assigned to DefensePro VA) you should optimize the VM running DefensePro VA as follows:

- Radware recommends pinning the DefensePro VA vCPUs to physical cores/hyperthreads and not let them be shared with other VMs, and to prevent the hypervisor from moving them. Memory over-subscription is discouraged.
- In a hyperthreaded environment, it is best to configure an even number of DefensePro engines and allocate whole physical cores (both hyperthreads on each physical core) for DefensePro VA, and not mix them with other VMs.
- On a host with multiple CPUs using the NUMA architecture, Radware recommends assigning all DefensePro VA vCPUs to cores/hyperthreads on the same NUMA node.

  You should also be aware of the of PCI slots-to-NUMA nodes mapping on such a host machine. Use the following Linux command to determine to which PCI slot the NIC is connected to:

  `cat /sys/class/net/ethX/device/numa_node`

  (where *ethX* is the Ethernet number. For example, **eth0** or **eth1**).

  Radware recommends assigning the PCI NICs that are connected to that same NUMA node to DefensePro VA running on a specific NUMA node.

Configuring DefensePro VA for KVM

After installing the Radware package, you can now deploy DefensePro VA.

To deploy DefensePro VA

1. Enter into the virsh console; type the command **`virsh`**.
2. In the virsh console prompt, type the following command to start the DefensePro VA virtual machine and to access the console:

   `start <VM_NAME> --console`

   For example: `start Setup1-NFV_UCS-10.185.6.111 --console`

   DefensePro boots up and the configuration wizard displays.
3. Run the configuration wizard to configure DefensePro VA.

   After the wizard completes, the system reboots.
4. You are prompted to change the default password.

   Further configuration of DefensePro VA can be performed through the management interface after its IP address has been configured.

DefensePro VA for VMware Installation and Configuration - for Passthrough Mode

This procedure details the steps and prerequisite procedures required for installation and configuration of DefensePro VA on a VMware platform for passthrough mode.

It includes the following topics:

Prerequisites

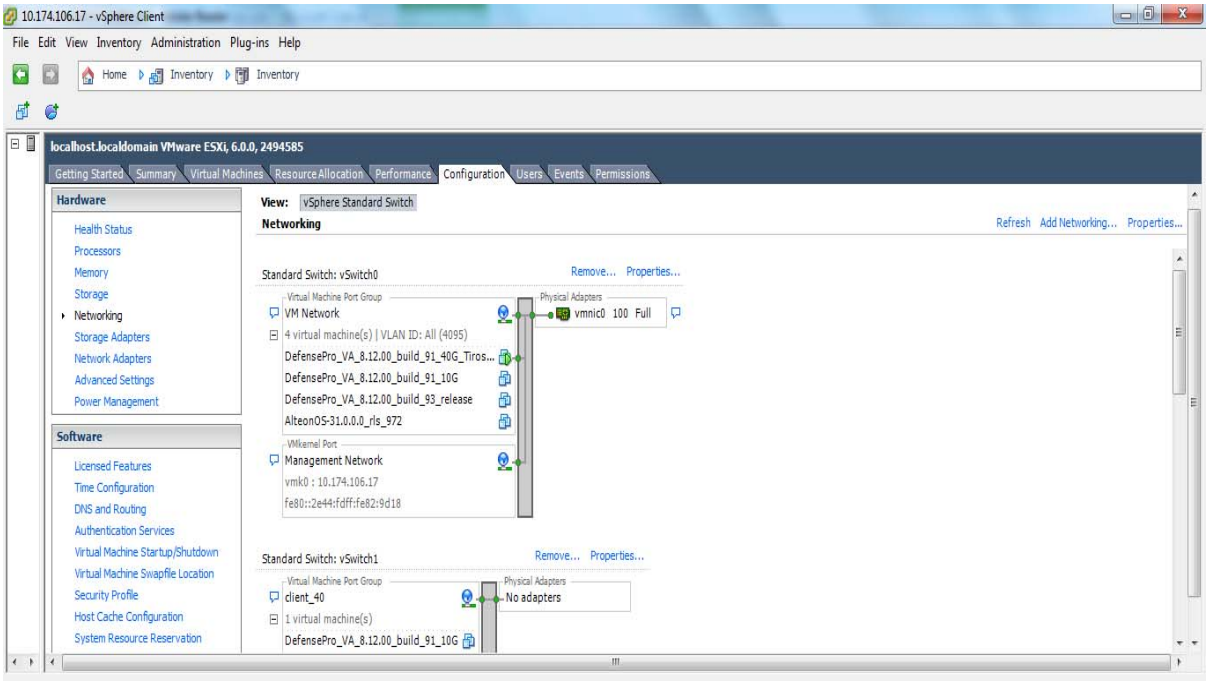
- For passthrough mode, you should first associate the physical ports of the host server (PCI addresses) with the VM running DefensePro VA. For details, refer to Configuring DefensePro VA in PCI Passthrough Mode, page 75.
- Fully functioning VMware infrastructure, including:
  - A VMware ESX server (versions: 5.5, 6.0)
  - An installed vSphere client
- The DefensePro VA OVA package
- For console support, VMware requires an Enterprise license.

Creating a vSwitch

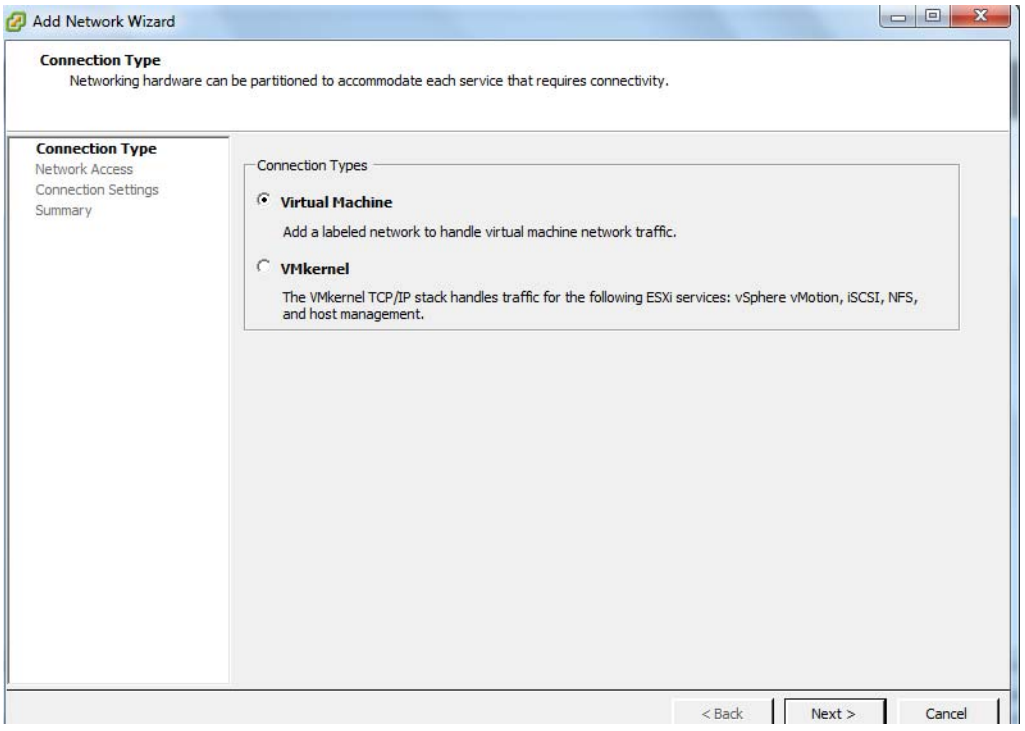
You must ensure that there are two vSwitches, one for DefensePro VA management and one for ULP secondary management.

To create a vSwitch

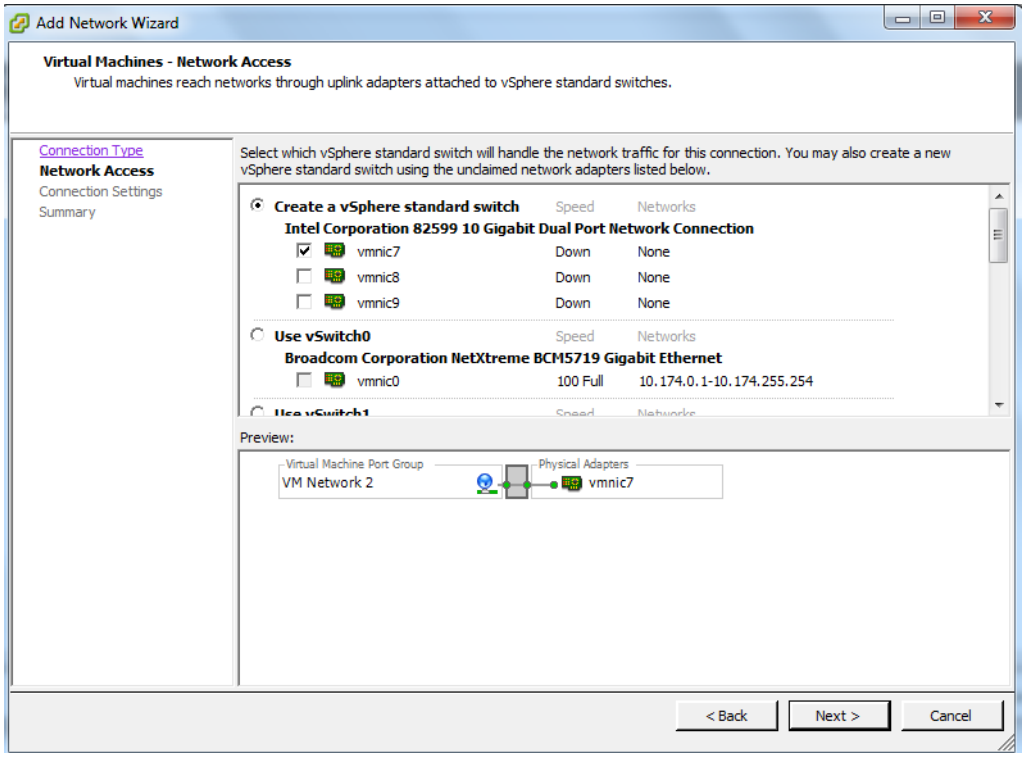
1. Open the vSphere Client and in the *Configuration* tab, under **Hardware**, select **Networking**.
2. On the top, right of the screen, click **Add Networking**.



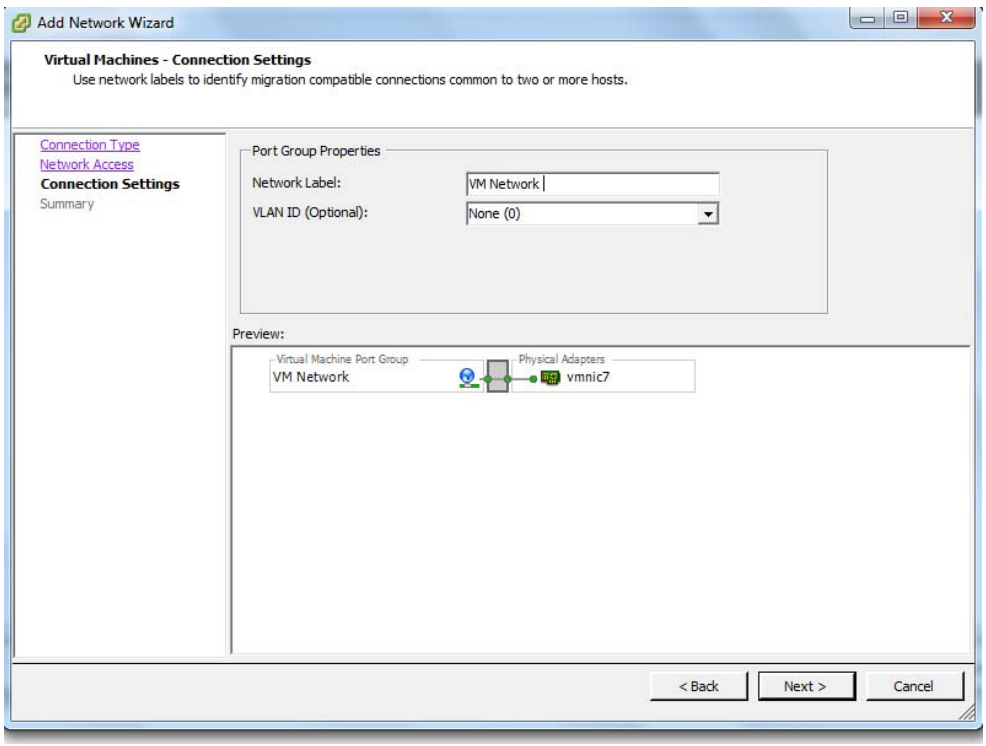
3. Select **Virtual Machine** and click **Next**.



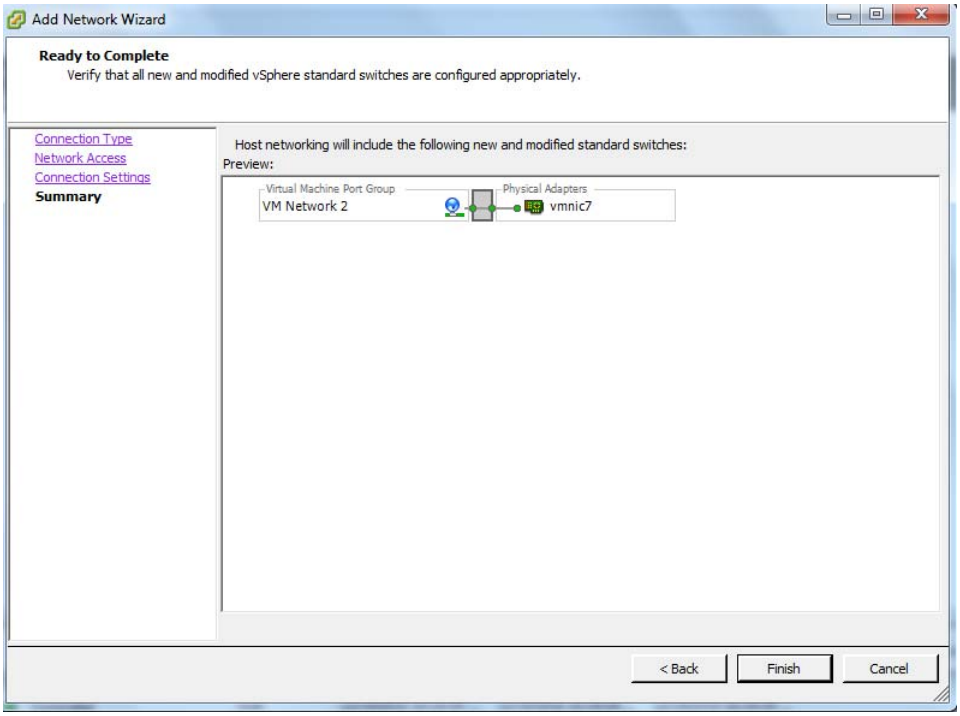
4. Select **Create a vSphere standard switch** and select one of the available connections and click **Next**.



5. Add **Network Label** (Name) and click **Next**.



6. Click **Finish**.



This creates a bridge on the vSwitch.

7. Repeat the process to create a second bridge.

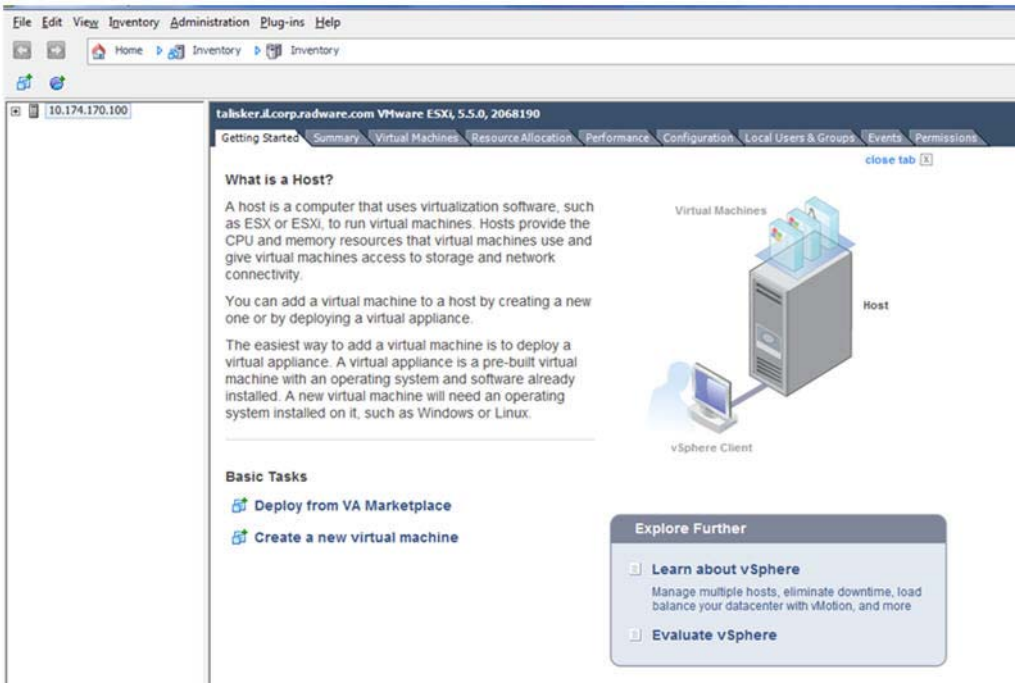
   For the second bridge (used internally by DefensePro VA), create a vSphere switch (step 4) without selecting a connection.

Selecting Network Interface Cards for PCI Passthrough

You must designate the host machine PCI NICs that you intend to use in passthrough mode for the data ports.

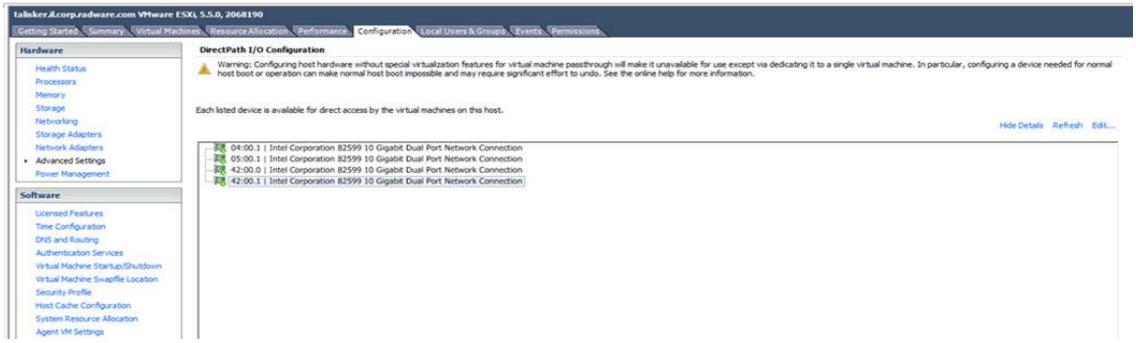
To set the NICs for passthrough

1. Open the vSphere client and select the node of the host machine.

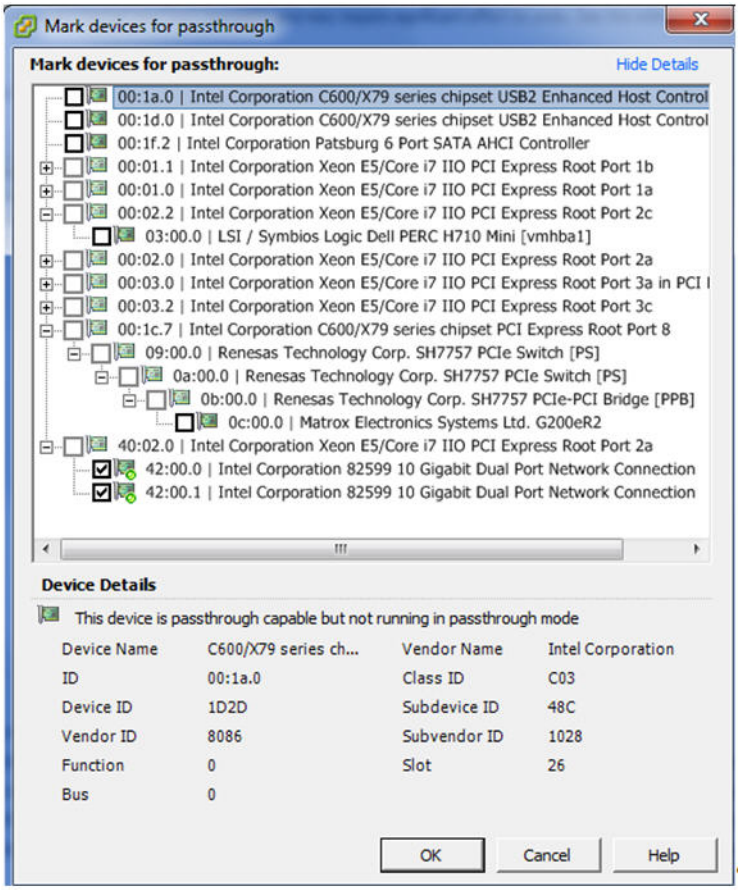


2. In the *Configuration* tab, select **Hardware > Advanced Settings**.

   A list of all the available network interface cards suitable for PCI passthrough displays.



3. Click **Edit** (on the far right side of the window).



4. Select the Intel NIC you want to use and click **OK**.
5. Repeat the procedure for the second NIC.

Optimizing the VM for Best DefensePro VA Performance

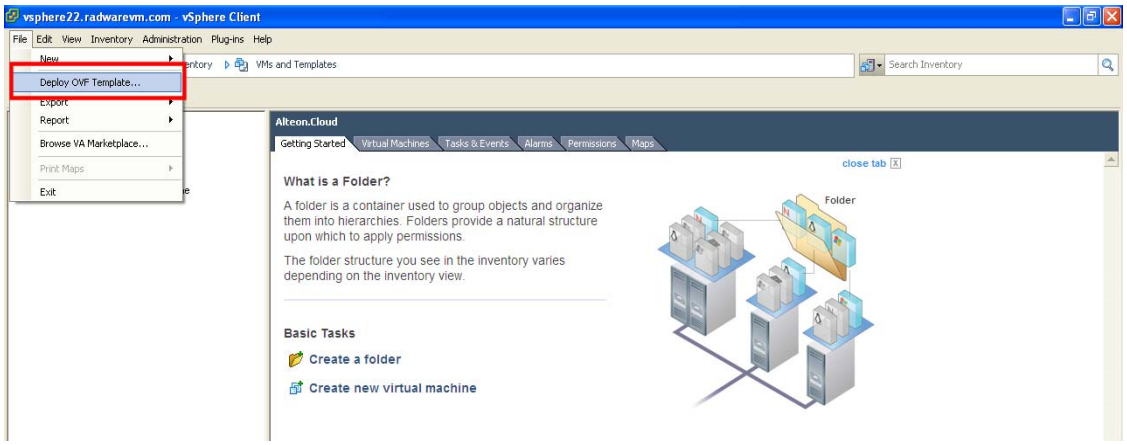
Radware recommends optimizing the VM running DefensePro VA as follows:

- Pinning the DefensePro VA vCPUs to physical cores/hyperthreads and not let them be shared with other VMs, and to prevent the hypervisor from moving them. Memory over-subscription is discouraged.
- In a hyperthreaded environment, it is best to configure an even number of DefensePro engines and allocate whole physical cores (both hyperthreads on each physical core) for DefensePro VA, and not mix them with other VMs.
- On a host with multiple CPUs using the NUMA architecture, Radware recommends assigning all DefensePro VA vCPUs to cores/hyperthreads on the same NUMA node.
  For the core pinning procedure, refer to the VMware documentation.
- Assigning the PCI NICs that are connected to that same NUMA node to DefensePro VA running on a specific NUMA node.

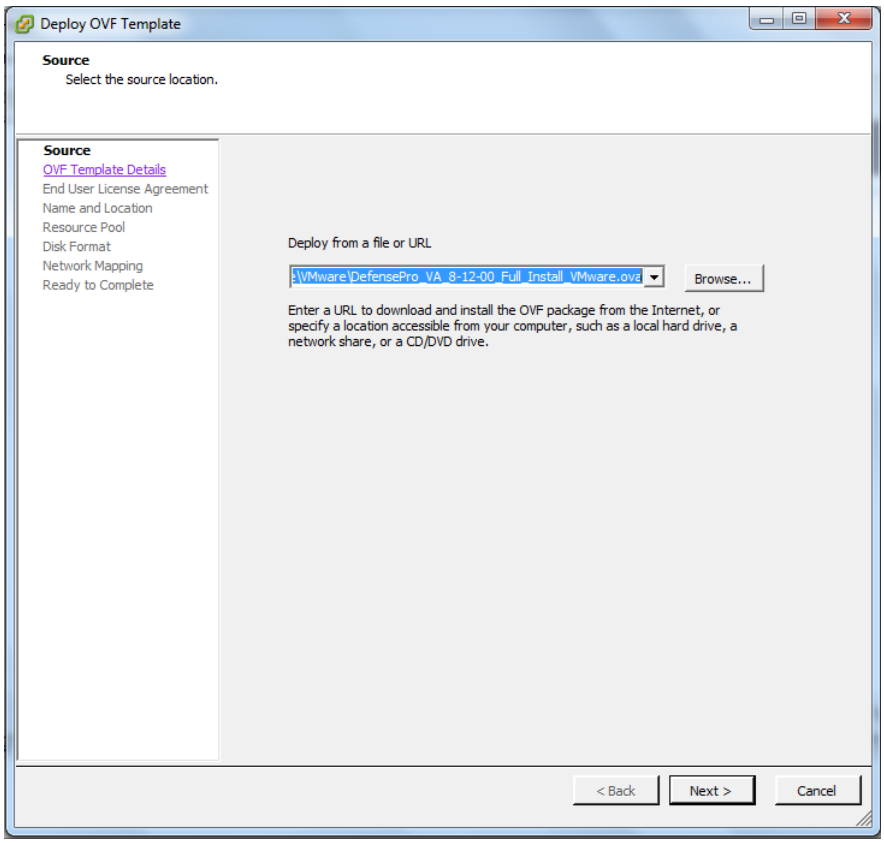
Deploying the DefensePro VA OVA Package

To deploy the DefensePro VA OVA

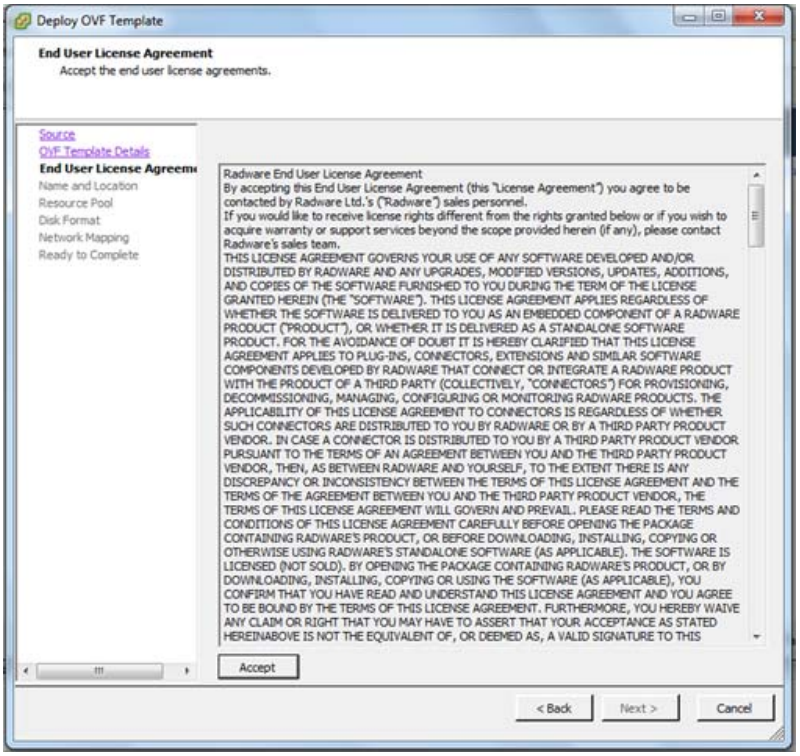
1. Log into the VMware vSphere client.



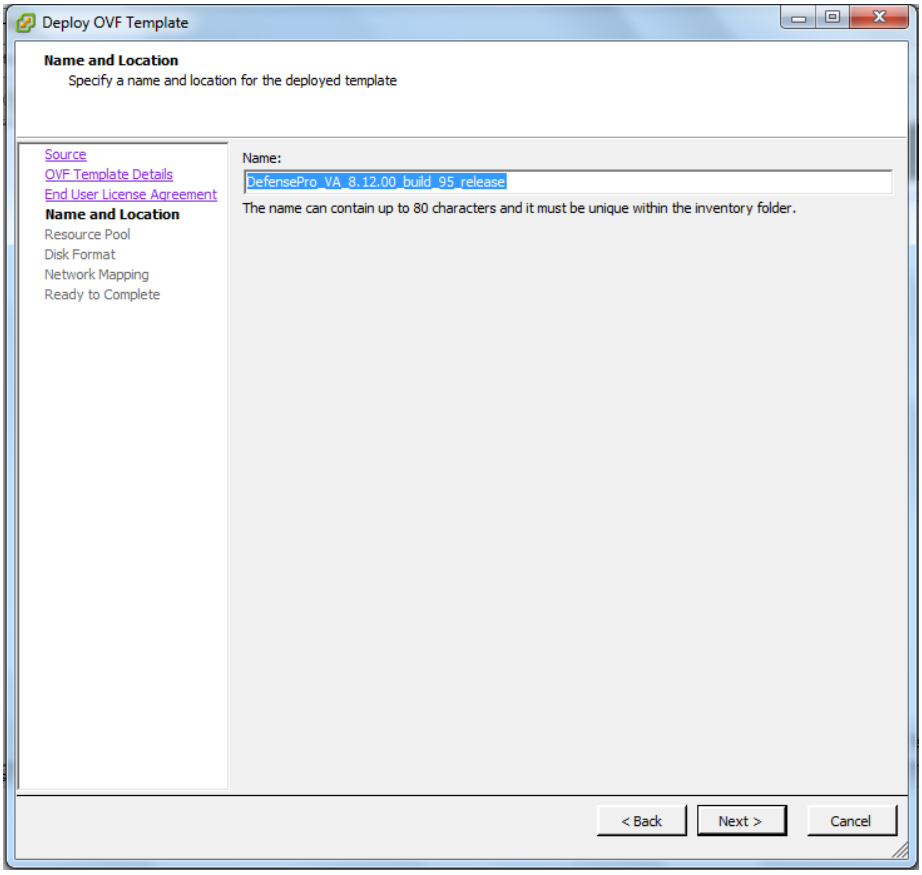
2. Deploy the OVA package by selecting **File > Deploy OVF Template**. The *Deployment OVF Template* wizard displays.



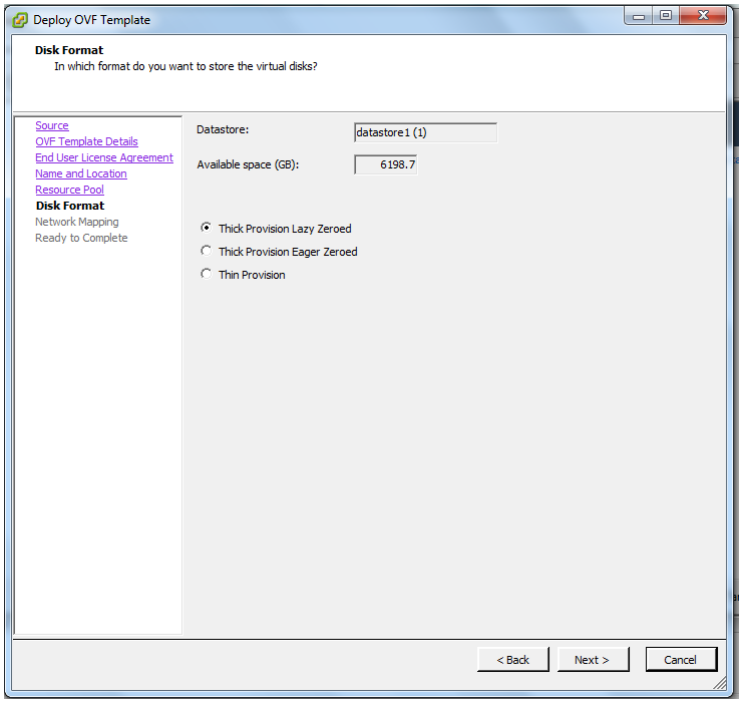
3. In the *Deploy OVF Template* dialog box, for **Deploy from a file**, click **Browse** to select the DefensePro VA OVA file, and click **Next**.



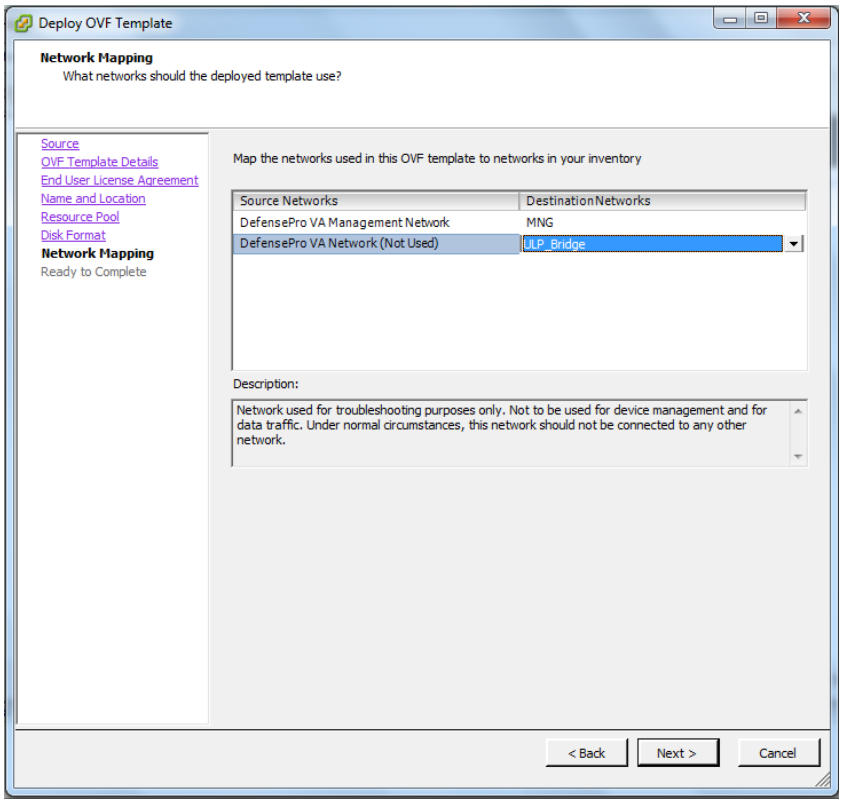
4. In the *End User Agreement* dialog box, click **Accept** to accept the end-user license agreement. Click **Next**.



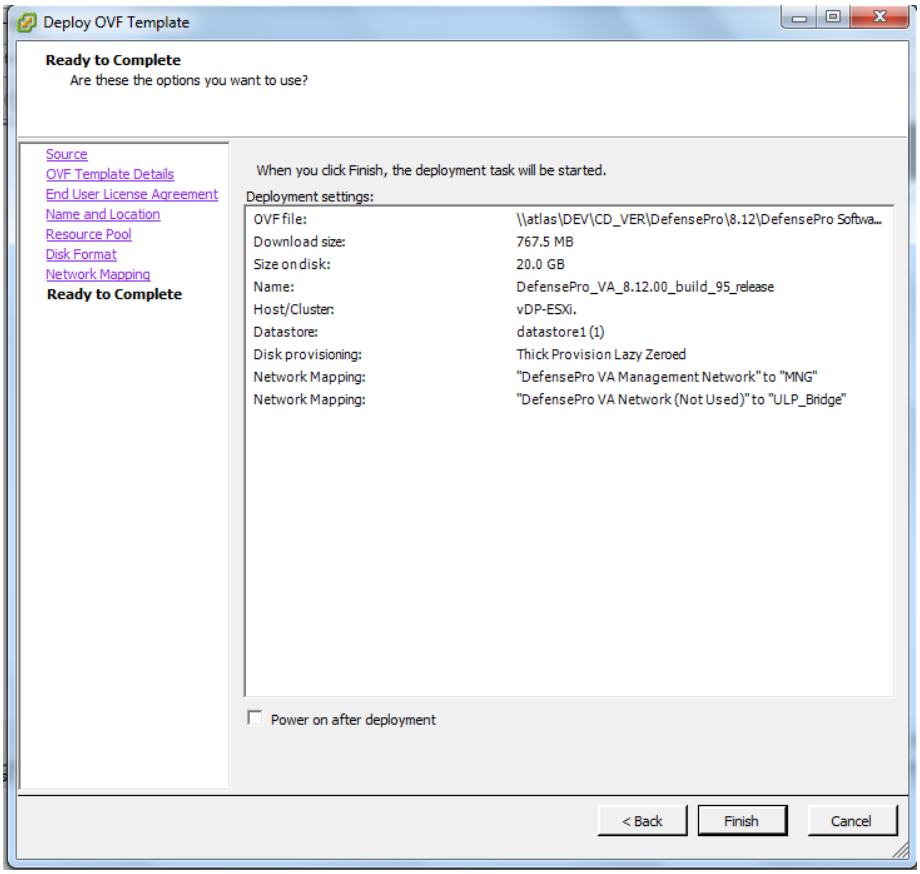
5. In the *Name and Location* dialog box, provide a name and location for the deployed template. The name can contain up to 80 characters and must be unique within the inventory folder, and click **Next**.



6. In the *Disk Format* dialog box, select **Thick Provision Lazy Zeroed** and click **Next**.



7. In the *Network Mapping* dialog box, select the DefensePro VA management network that you defined - the management bridge and ULP secondary management and click **Next**.



8. Click **Next** to view the options you selected, and then click **Finish**.

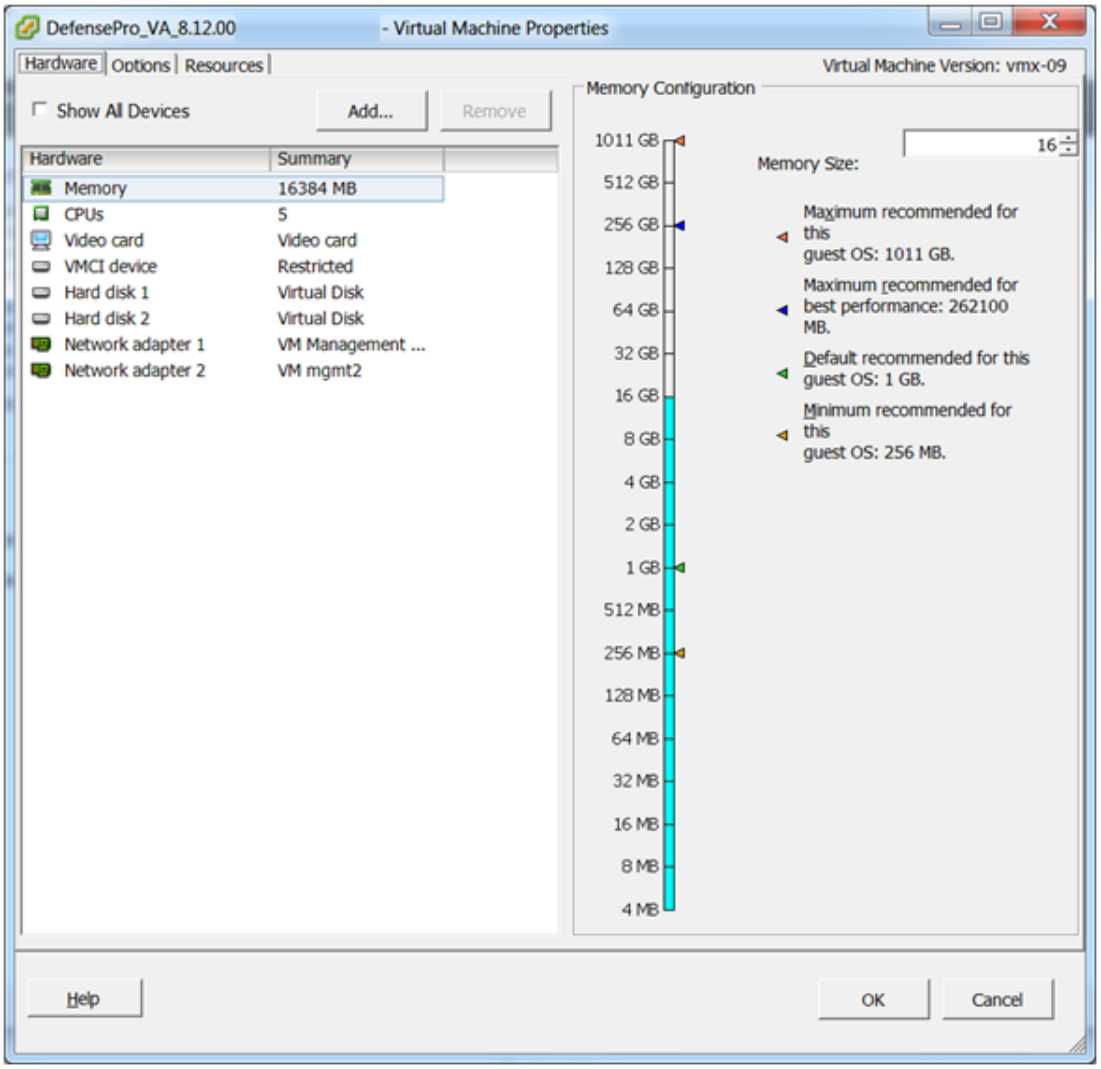
Note: Ensure that the option **Power on after deployment** is not selected.

Configuring the Network Adapters

1. From the **Home > Inventory** drop-down menu, select **Templates and VMs**.
2. In the *VM Inventory tree*, right-click the desired DefensePro VA from the list, and then select **Edit Settings**.

Note: If no virtual machines are displayed, verify that **Show VMs in Inventory** is selected in the Vsphere client **View** menu option.

3. Assign each network adapter to the pre-defined network connections for management, clients, and servers.



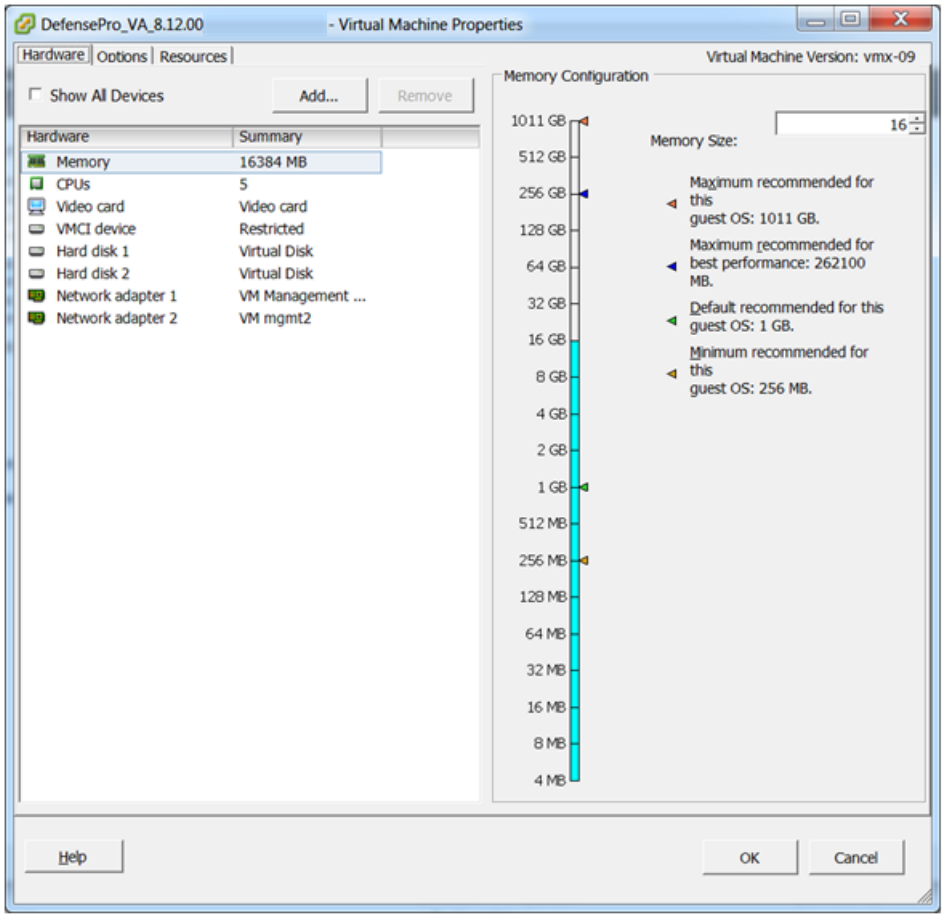
Configuring the DefensePro VA VM Settings

After successfully deploying the OVA, you have to resize the VM by setting the vCPUs, disk, and RAM size, enable huge-page, assign the PCI passthrough NICs for data ports, and add a serial connection for console.

To configure the VM settings

1. Access the vSphere client.
2. Right-click on the DefensePro VA VM and select **Edit Settings**.
3. Set the number of vCPUs and the RAM size of the VM.

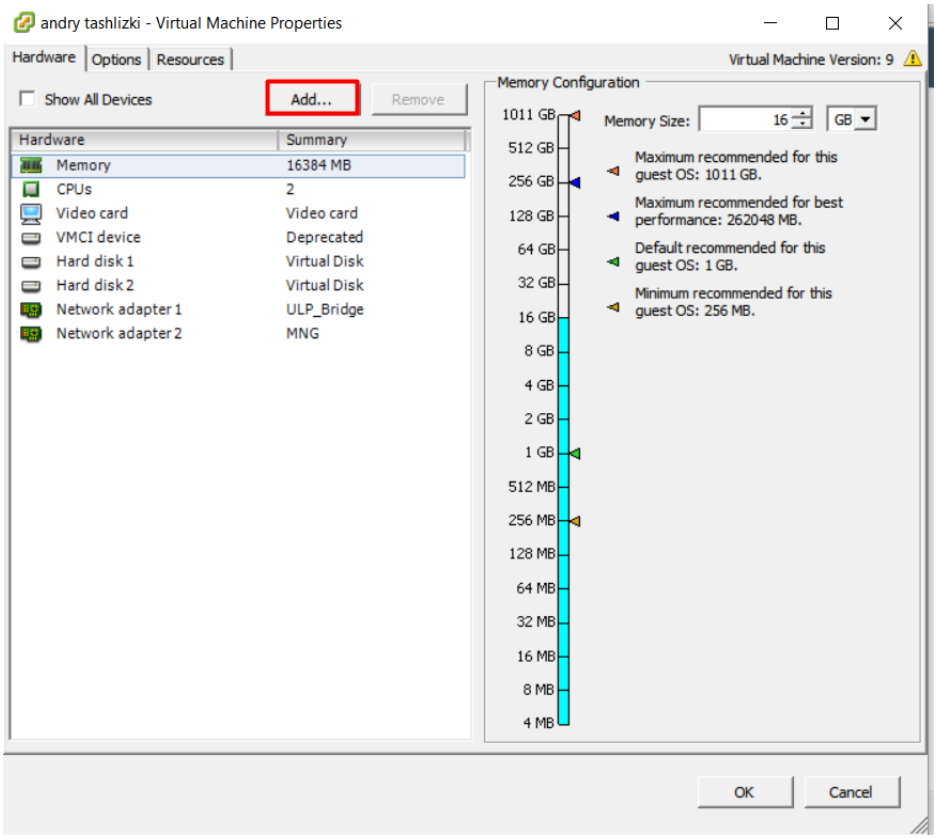
   See Minimum Requirements, page 31 to determine the VM sizes required.



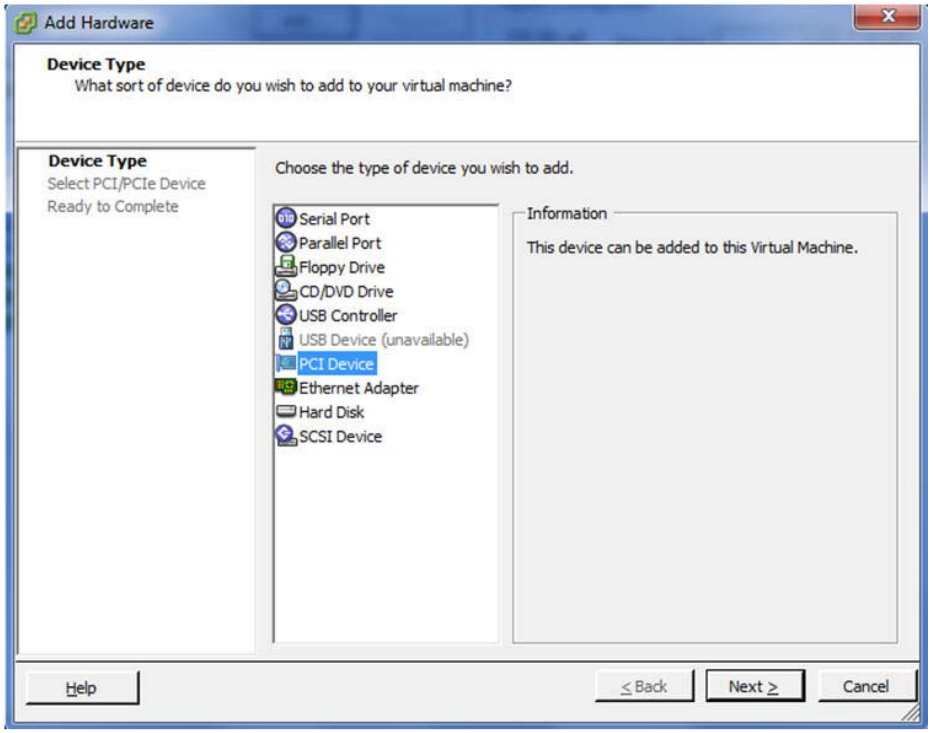
4. Press **OK**.

   Assign the PCI passthrough NIC designated in the prerequisites stage to the DefensePro VA VM.

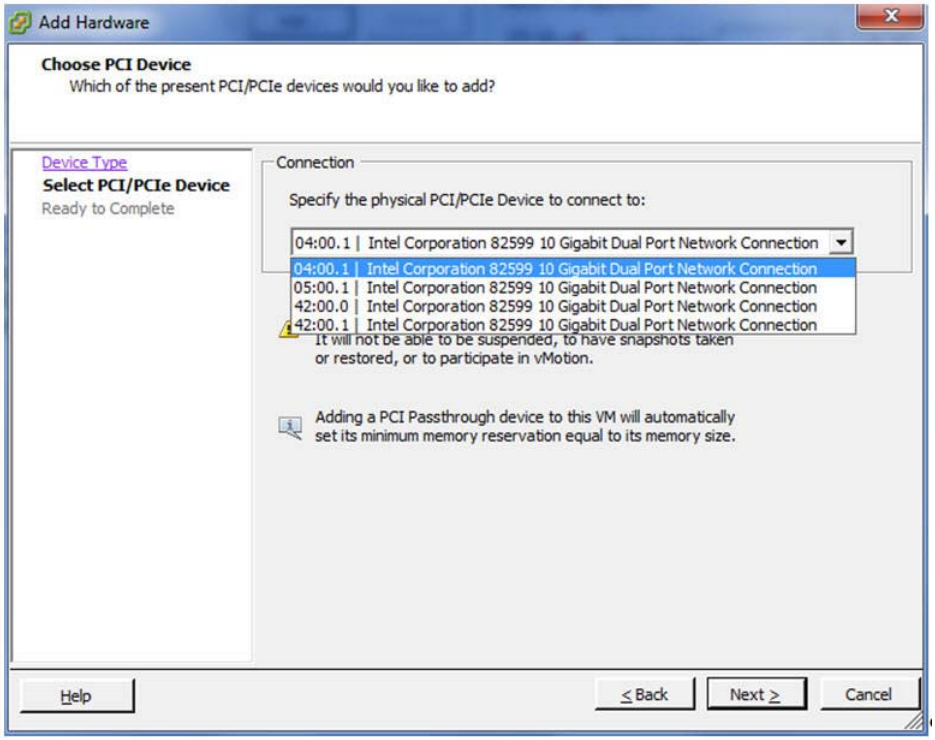
5. From the *navigation tree*, right-click on the Virtual Machine and select **Edit Settings**.
6. From the *Hardware* tab, click **Add**.
7. Select **PCI Device**.



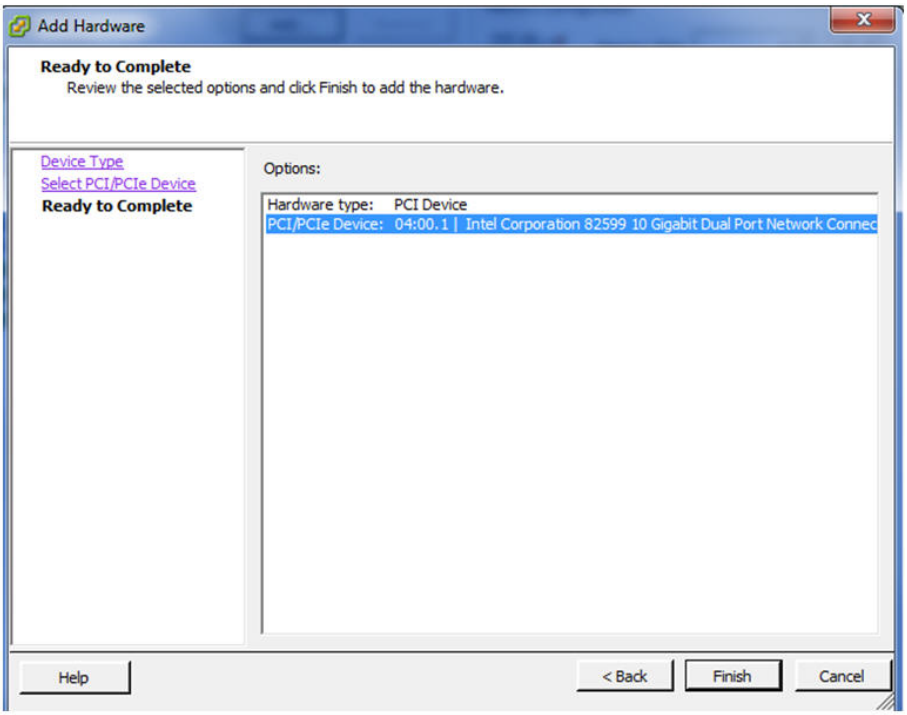
8. Click **Next** and **Finish**. Do this for the two interface ports.



9. Select the PCI NIC to attach to the VM and click **Next**.



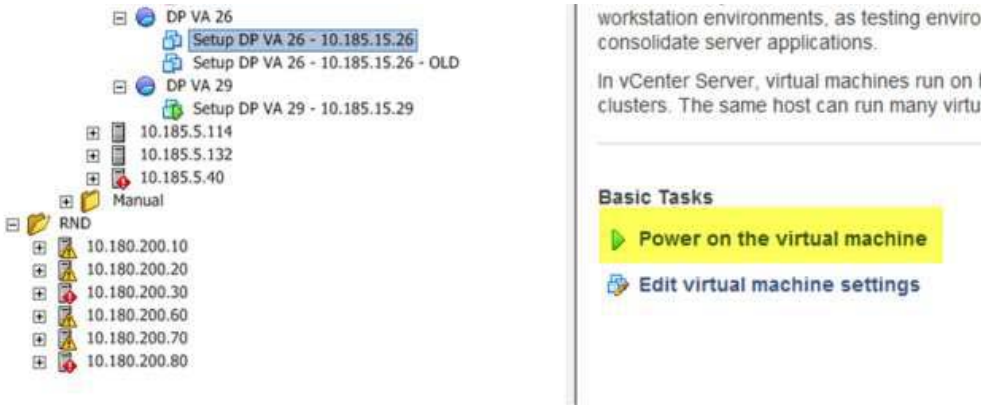
10. Click **Finish**.



11. Repeat steps 1 through 5 to attach all the NICs to the VM.

The VM settings are now configured.

12. Power on the Virtual machine.



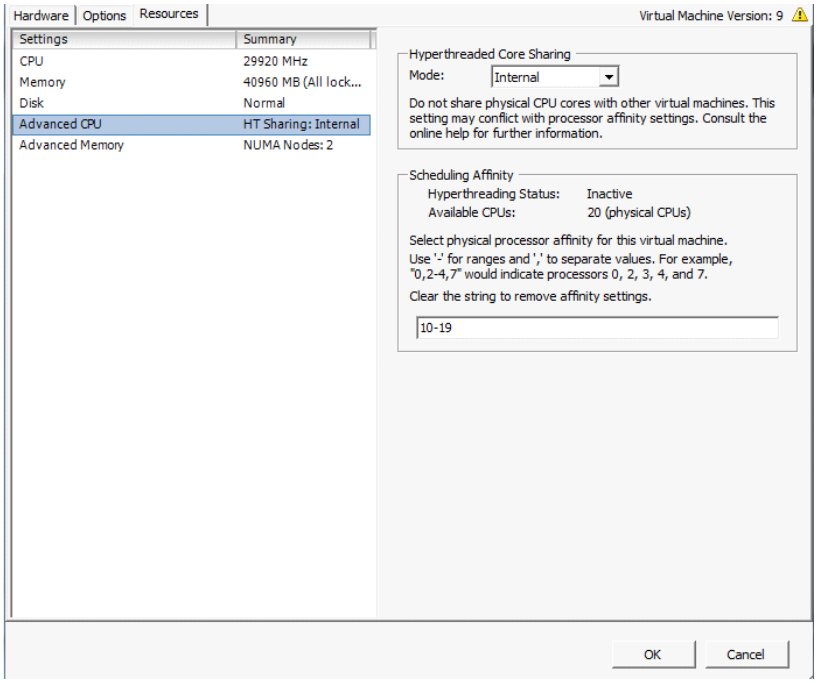
13. Log in to the VM console.
    Connect to the servers IP (for example, 10.185.5.112) and use Telnet port 20XX (for example, setup 29 will be 2029).

Core Pinning

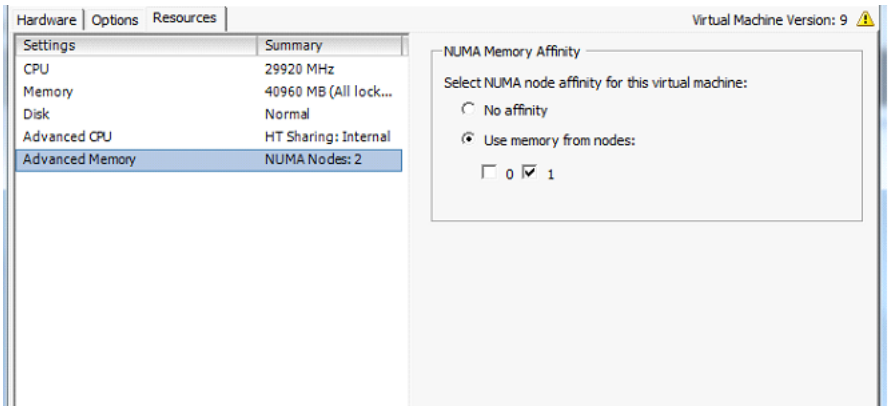
In order to optimize performance, it is suggested to set core pinning in VMware.

To set core pinning

1. In the virtual machine, go to the **Resource** tab.
2. Select **Advanced CPU**.
3. In the **Hyperthread Core Sharing** area, set the **Mode** parameter to **Internal**.
4. In the **Scheduling Affinity** area, enter the physical processor affinity (CPU Pinning) range. (For example, 10-19, as shown in the screen below.)



5. Select **Advanced Memory**.
6. Select **Use Memory from Nodes**, and select **1.**



Core pining is now configured.

DefensePro VA for VMware Installation and Configuration - for VirtIO Mode

This procedure details the steps and prerequisite procedures required for installation and configuration of DefensePro VA on a VMware platform for VirtIO mode.

This section includes the following topics:

- Deploying the DefensePro VA OVA Package, page 57
- Configuring the DefensePro VA VM Settings, page 60
- Core Pinning, page 63

Note: VirtIO is supported from version 8.16.0.

Prerequisites

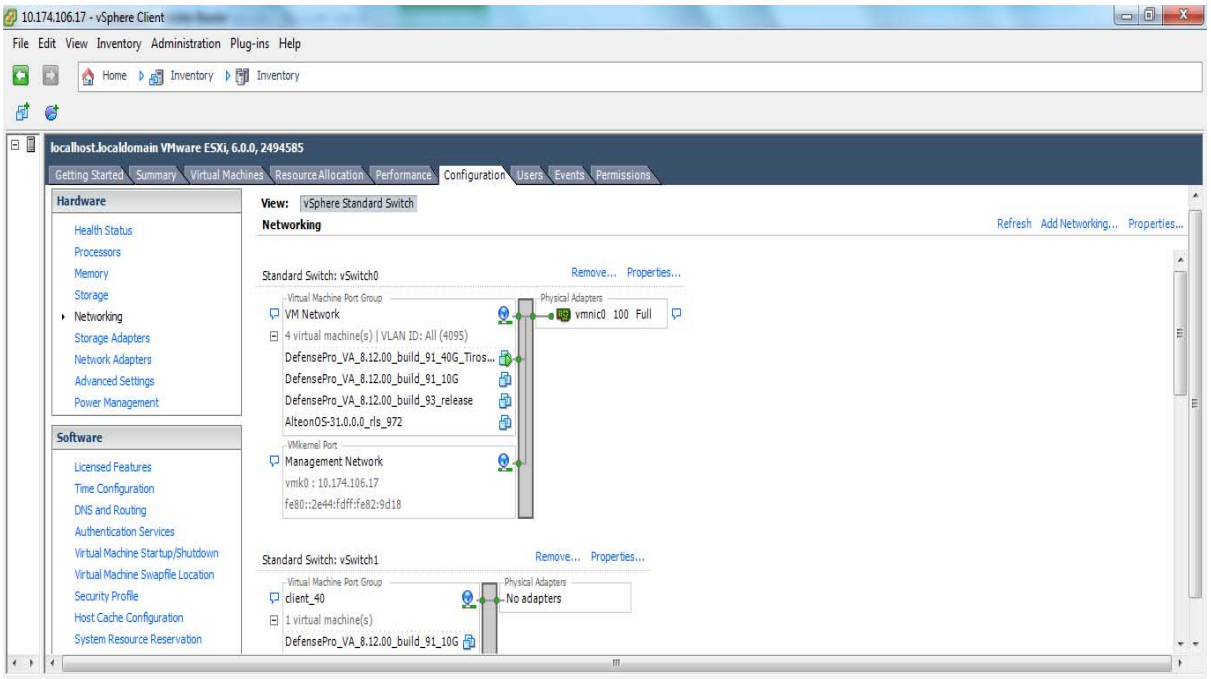
- Fully functioning VMware infrastructure, including:
  - A VMware ESX server (versions: 5.5, 6.0)
  - An installed vSphere client
- The DefensePro VA OVA package
- For console support, VMware requires an Enterprise license.

Creating a vSwitch

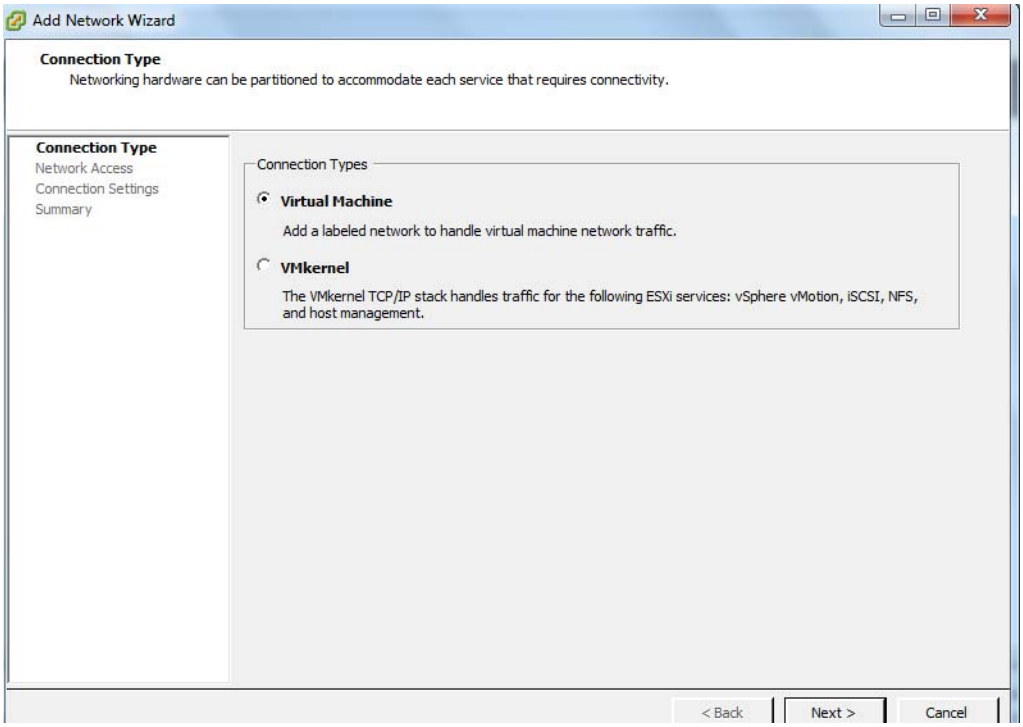
You must ensure that there are four vSwitches created on the ESX server, two for DefensePro VA management and two for data.

To create a vSwitch

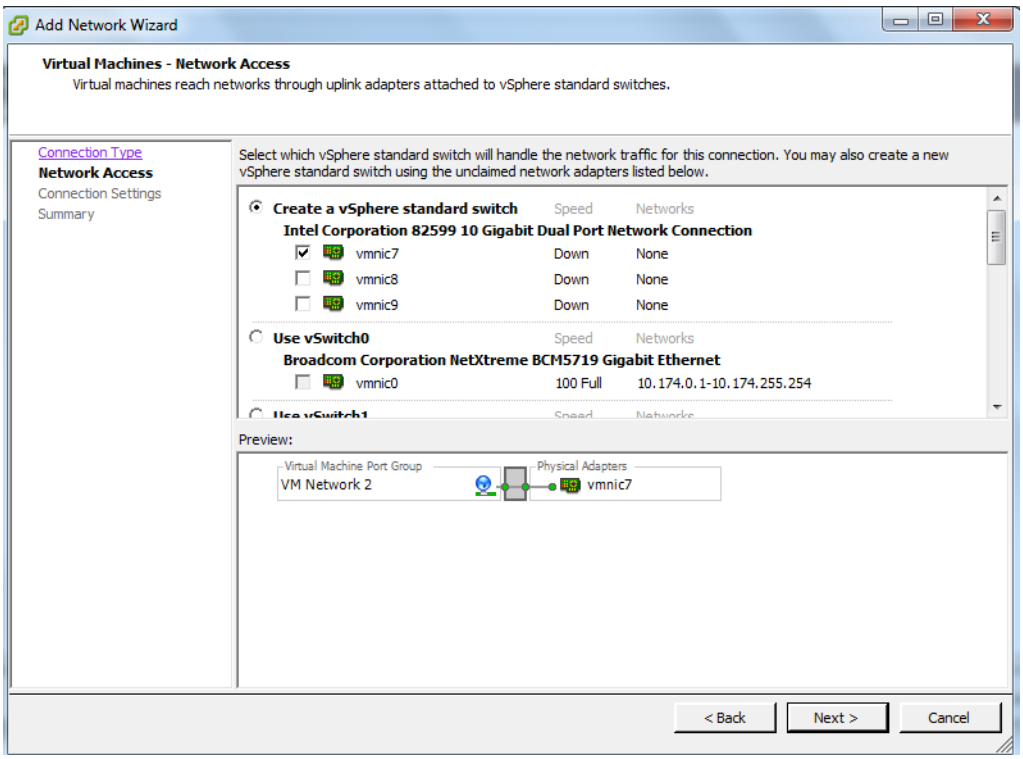
1. Open the vSphere Client and in the *Configuration* tab, under **Hardware**, select **Networking**.
2. On the top, right of the screen, click **Add Networking**.



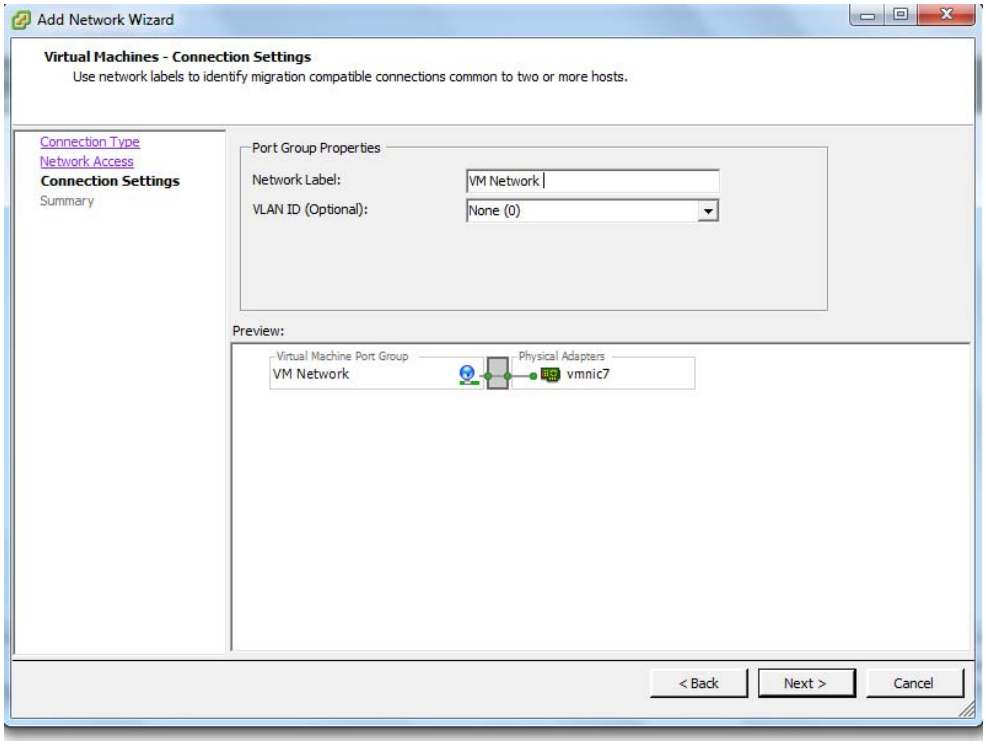
3. Select **Virtual Machine** and click **Next**.



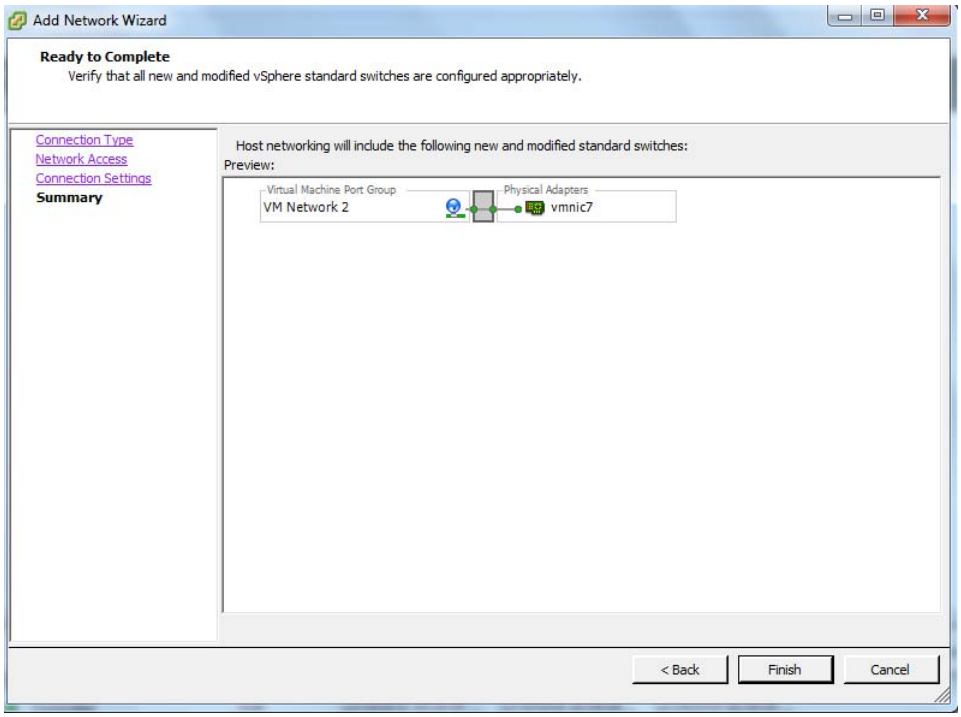
4. Select **Create a vSphere standard switch** and select one of the available connections and click **Next**.



5. Add **Network Label** (Name) and click **Next**.



6. Click **Finish**.

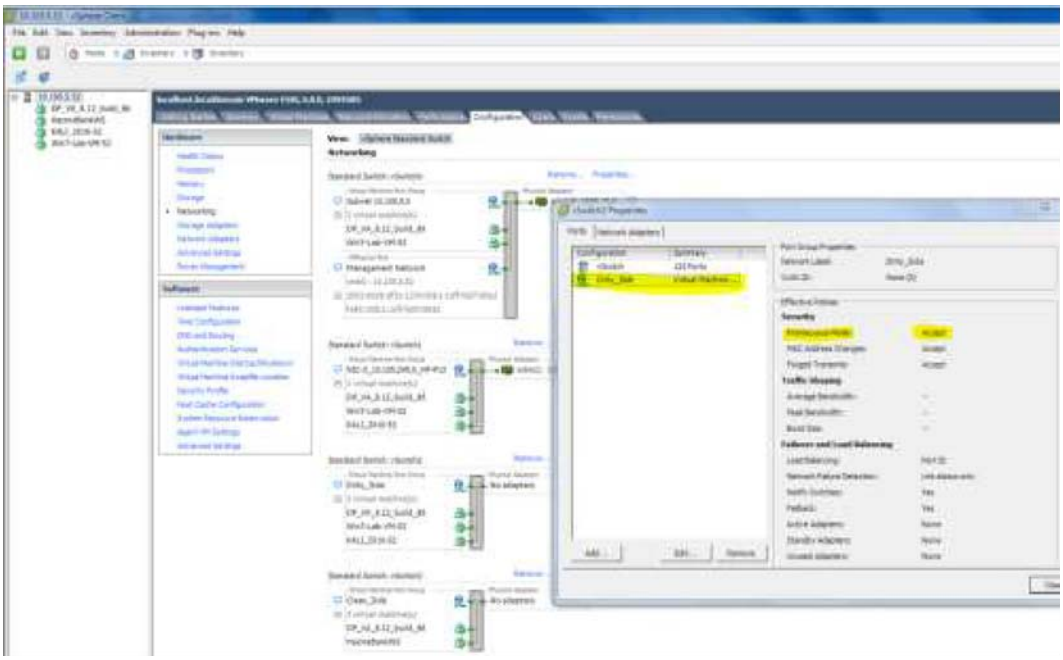


This creates a vSwitch.

7. Repeat the process to create a second vSwitch.

8. Repeat the process to create two more vSwitches to be used internally by DefensePro VA. For these, create a vSphere switch (step 4) without selecting a connection.

Note: Make sure you set both data vSwitches to **Promiscuous Mode - Accept**, as shown below.

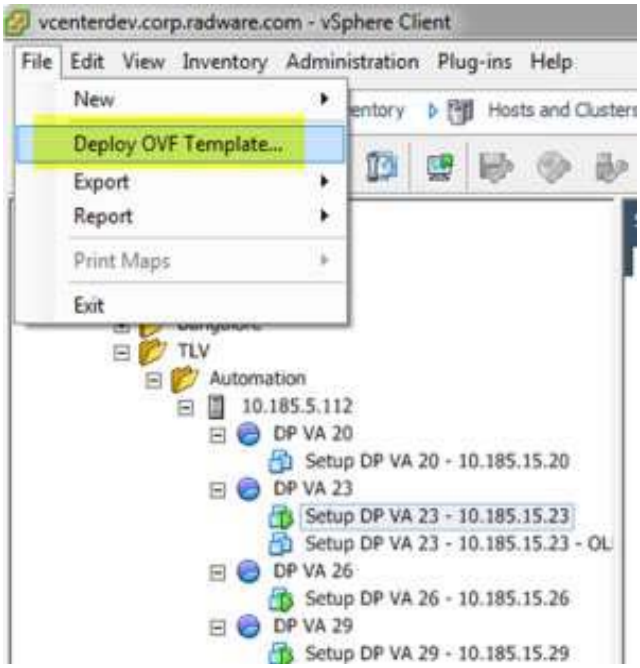


Deploying the DefensePro VA OVA Package

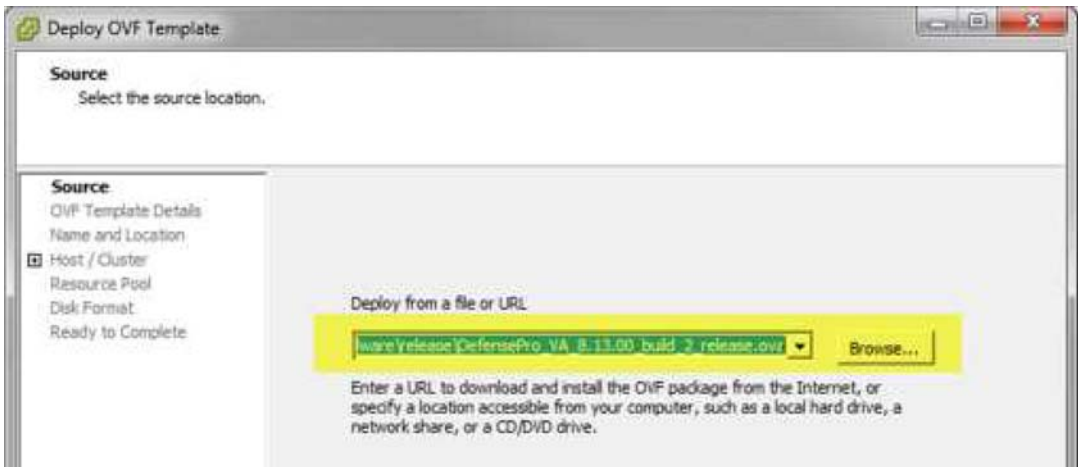
DefensePro VA for ESXi OS comes in an *.ova* format and is found inside the vDP builds folder.

To deploy the DefensePro VA OVA

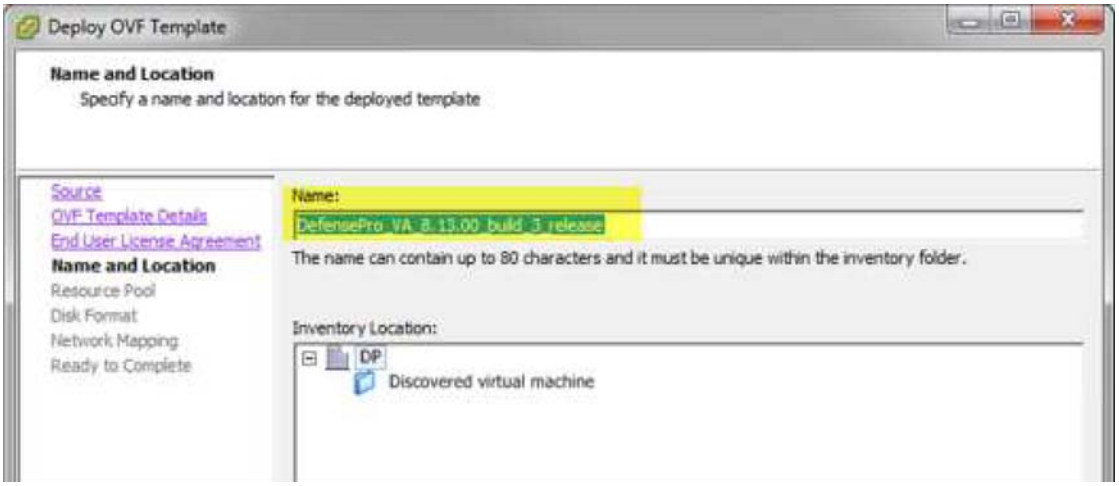
1. Log into the VMware vSphere client.
2. Deploy the OVA package by selecting **File > Deploy OVF Template**. The *Deployment OVF Template* wizard displays.



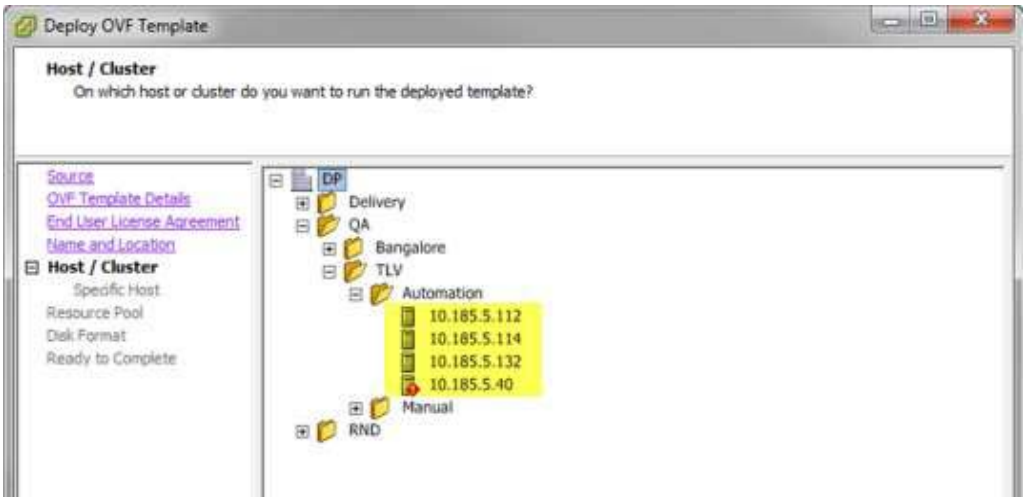
3. In the *Deploy OVF Template* dialog box, for **Deploy from a file**, click **Browse** to select the DefensePro VA OVA file, and click **Next**.



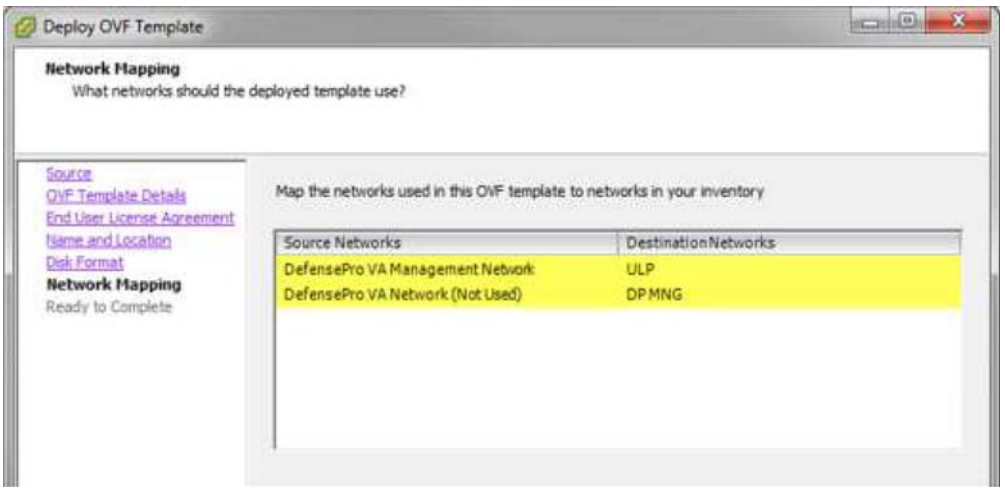
4. In the *Name and Location* dialog box, provide a name and location for the deployed template. The name can contain up to 80 characters and must be unique within the inventory folder, and click **Next**.



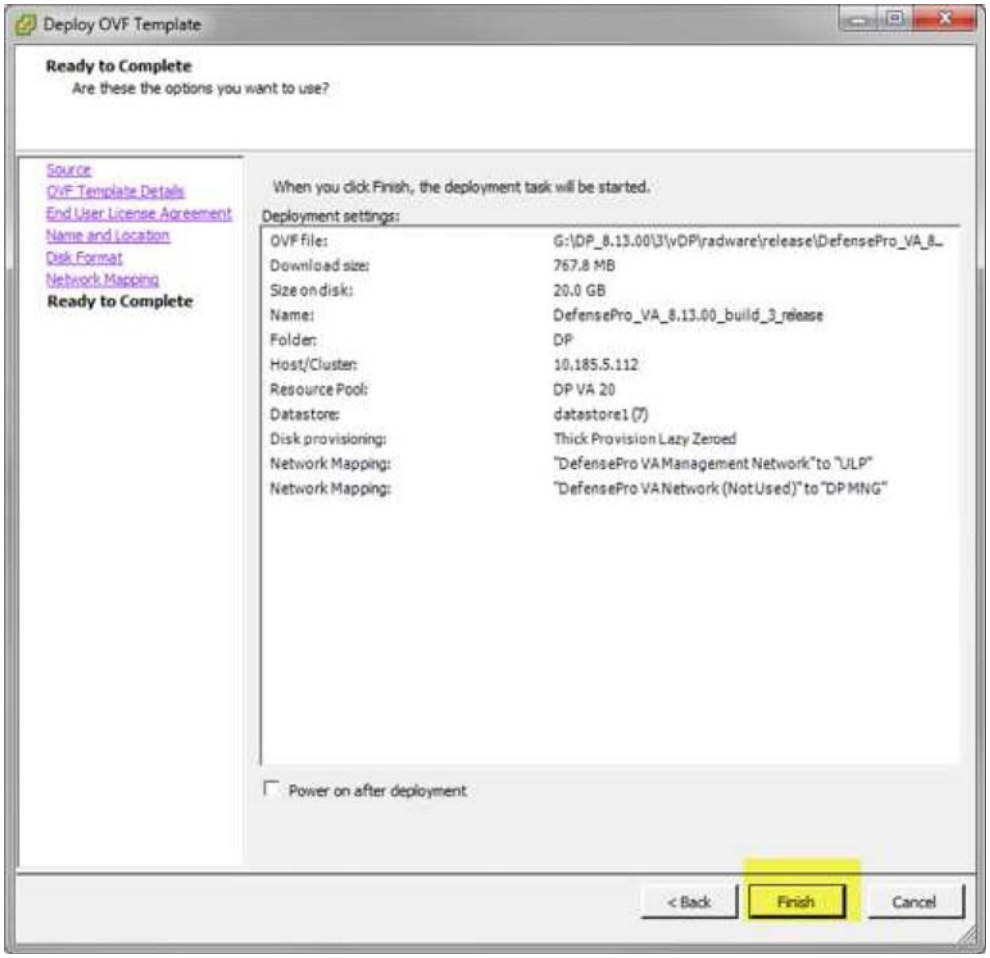
5. In the *Host/Cluster* screen, select a server to add the DefensePro VM to:



6. Click **Next** until you get to the *Network Mapping* screen. Two interfaces are shown: one is for management, and the second is not for use.



7. Click **Next** to view the options you selected, and click **Finish**.



8. Wait until the deployment is completed.

Configuring the Network Adapters

1. From the **Home > Inventory** drop-down menu, select **Templates and VMs**.
2. In the *VM Inventory tree*, right-click the desired DefensePro VA from the list, and then select **Edit Settings**.

   Note: If no virtual machines are displayed, verify that **Show VMs in Inventory** is selected in the Vsphere client **View** menu option.

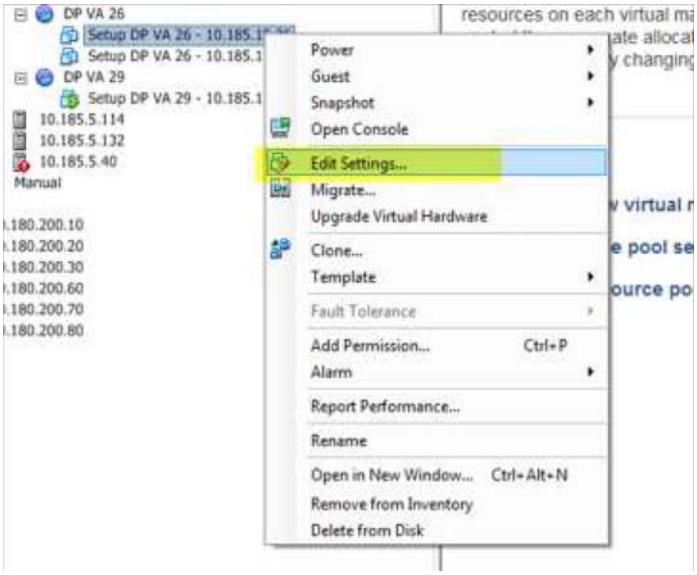
3. Assign each network adapter to the pre-defined network connections for management, clients, and servers.

Configuring the DefensePro VA VM Settings

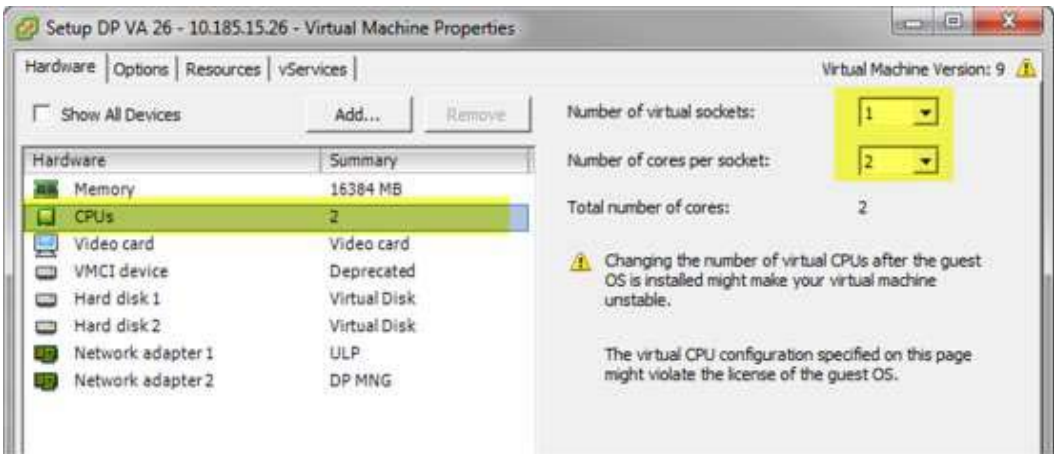
After successfully deploying the OVA, you have to resize the VM by setting the vCPUs, disk, and RAM size, assign the created virtual switch for data ports, and add a serial connection for console.

To configure the VM settings

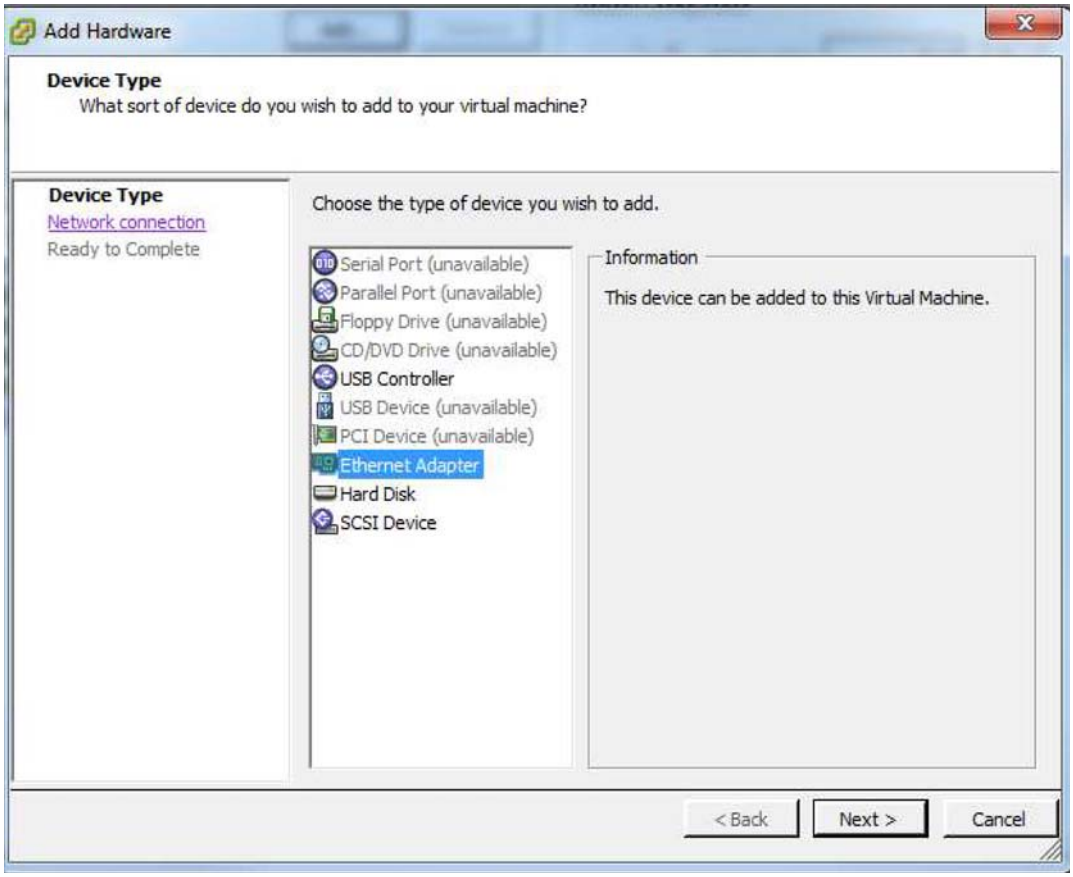
1. Access the vSphere client.
2. Right-click on the DefensePro VA VM and select **Edit Settings**.



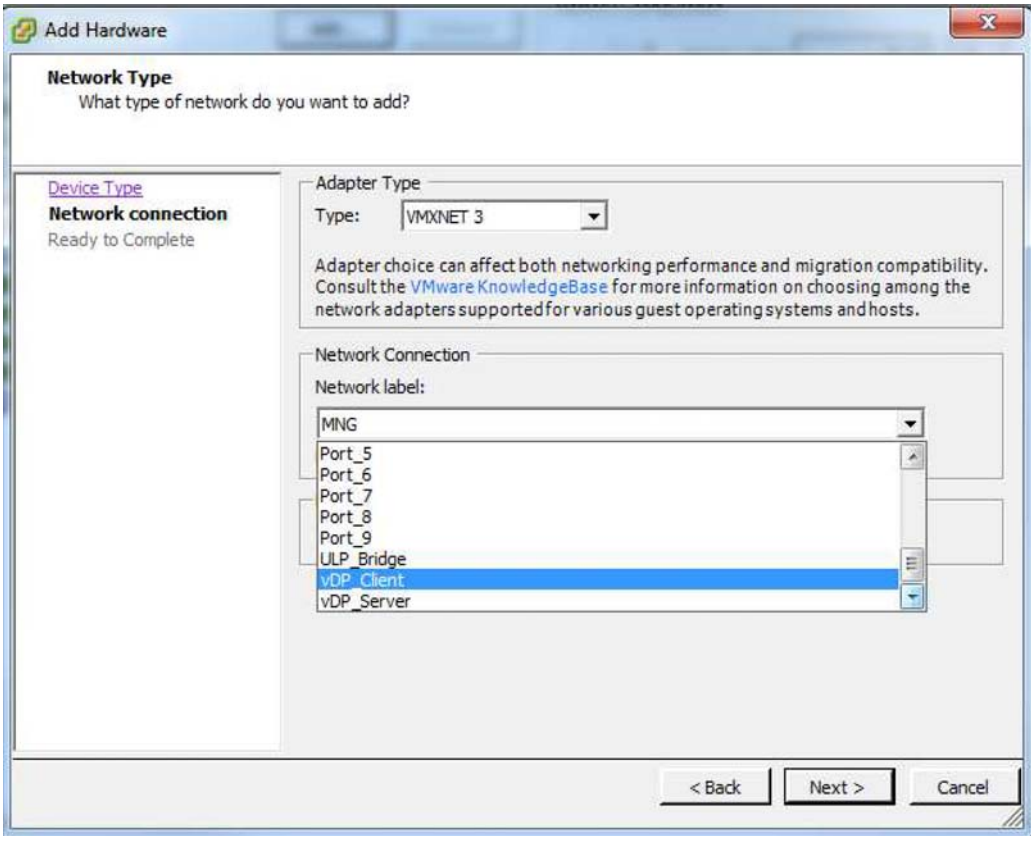
3. Enter the number of virtual sockets as **1**, and the number of cores per socket as **2**.



4. To configure data ports, click **Add**, then click **Ethernet Adapter** and **Next**.



5. Select the relevant data vSwitch for the setup. (Do this step twice - once for the client and once for the server).
   Select **Adapter Type** as **VMXNET 3**.



Note: Optimize the VM for best DefensePro VA performance. Radware recommends optimizing the VM running DefensePro VA as follows:

- Pinning the DefensePro VA vCPUs to physical cores/hyperthreads and not let them be shared with other VMs, and to prevent the hypervisor from moving them. Memory over-subscription is discouraged.
- In a hyperthreaded environment, it is best to configure an even number of DefensePro engines and allocate whole physical cores (both hyperthreads on each physical core) for DefensePro VA, and not mix them with other VMs.
- On a host with multiple CPUs using the NUMA architecture, Radware recommends assigning all DefensePro VA vCPUs to cores/hyperthreads on the same NUMA node.

Core Pinning

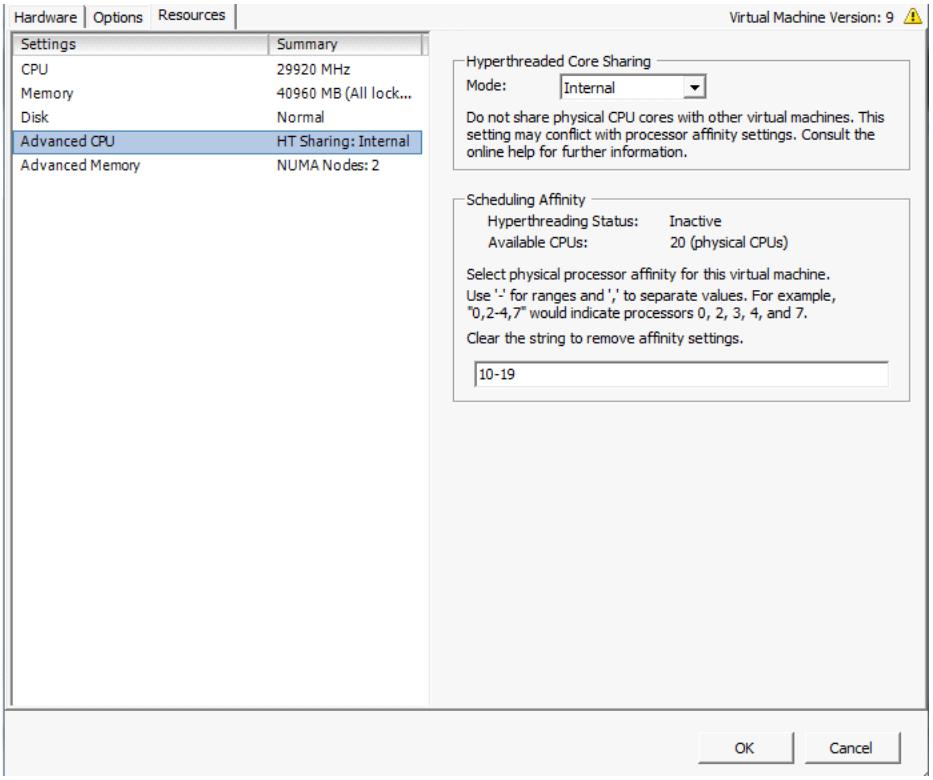
In order to optimize performance, it is suggested to set core pinning in VMware.

a. In the virtual machine, go to the **Resource** tab.

b. Select **Advanced CPU**.

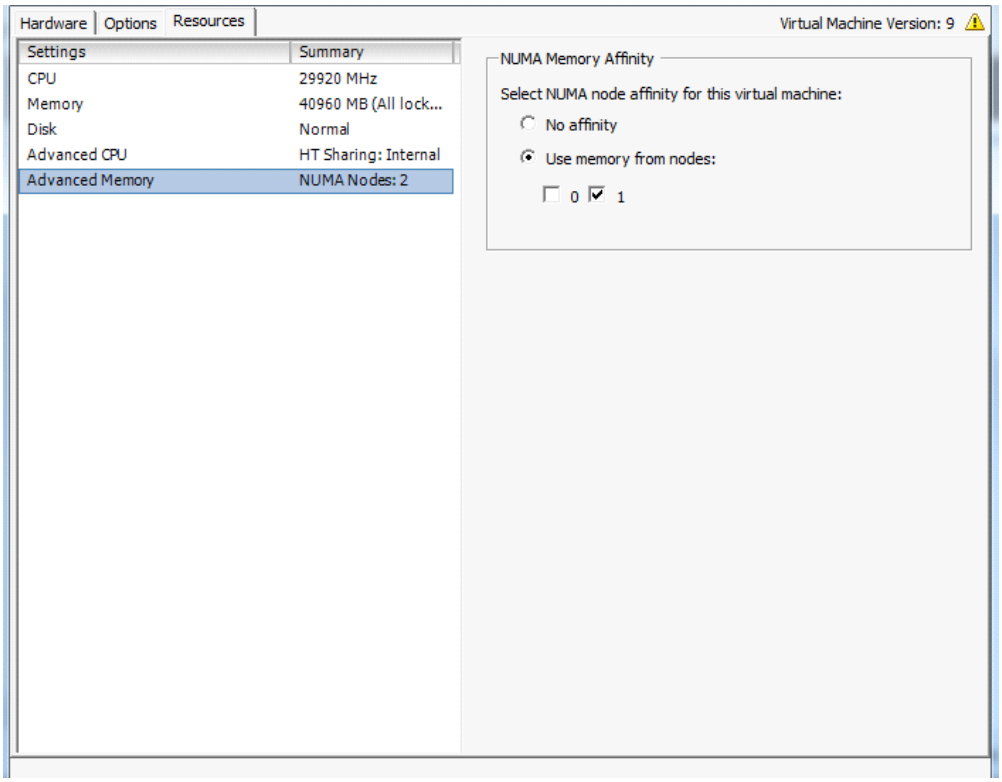
c. In the **Hyperthread Core Sharing** area, set the **Mode** parameter to **Internal**.

d. In the **Scheduling Affinity** area, enter the physical processor affinity (CPU Pinning) range. (For example, 10-19, as shown in the screen below.)

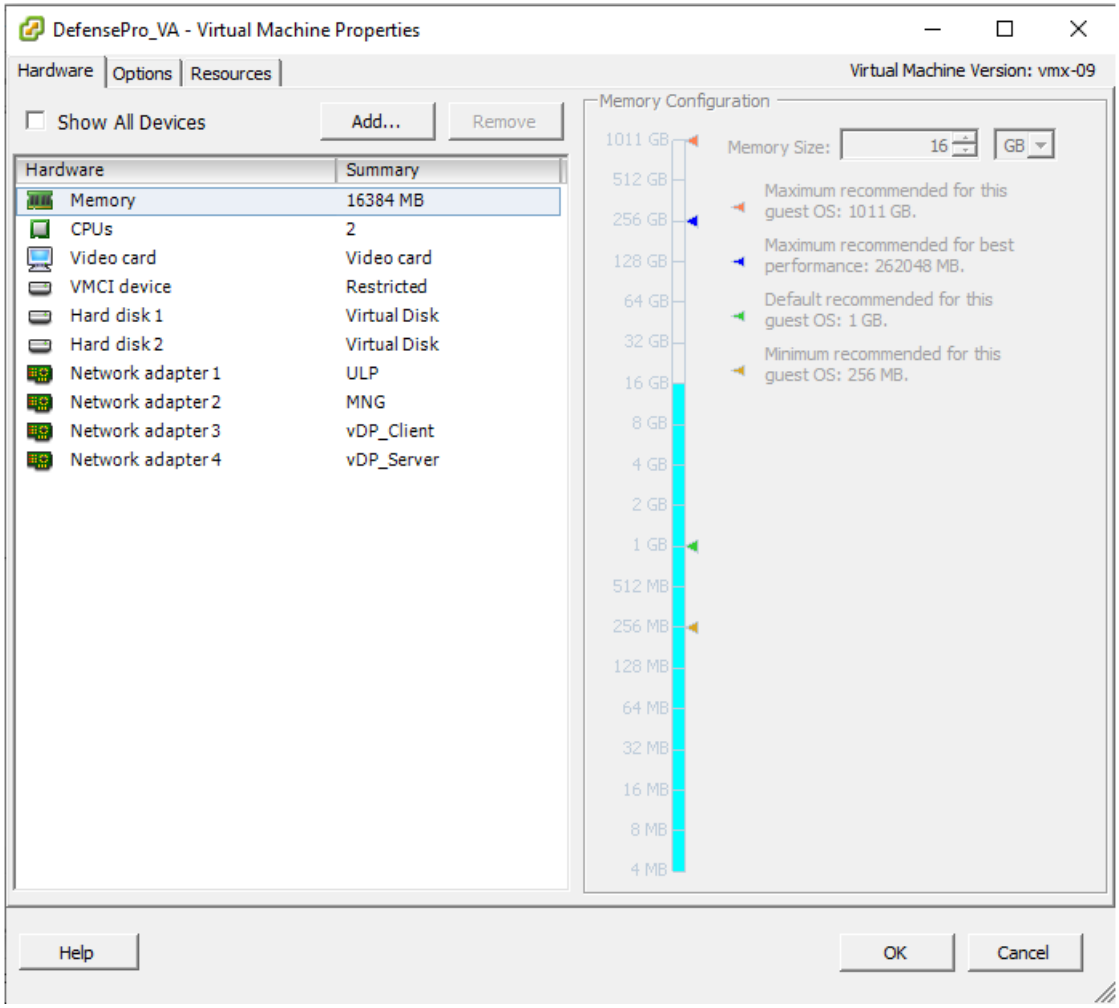


e. Select **Advanced Memory**.

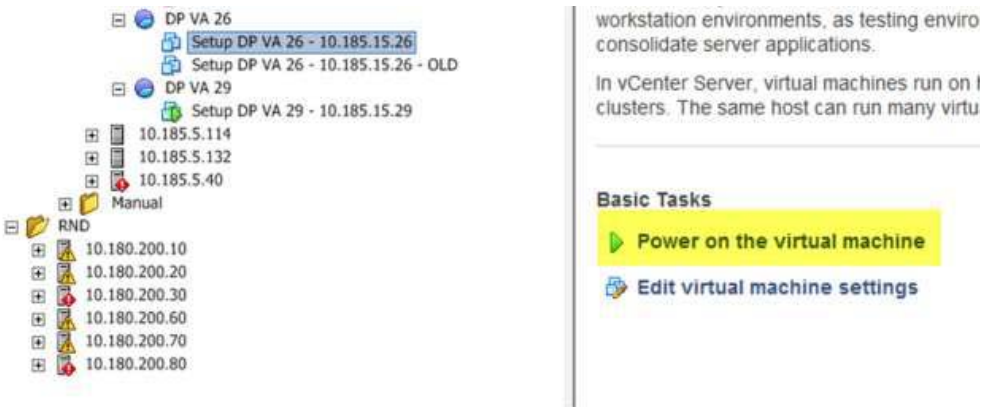
f. Select **Use Memory from Nodes**, and select **1.**



6. At the end of the process, the VM settings should look as follows:

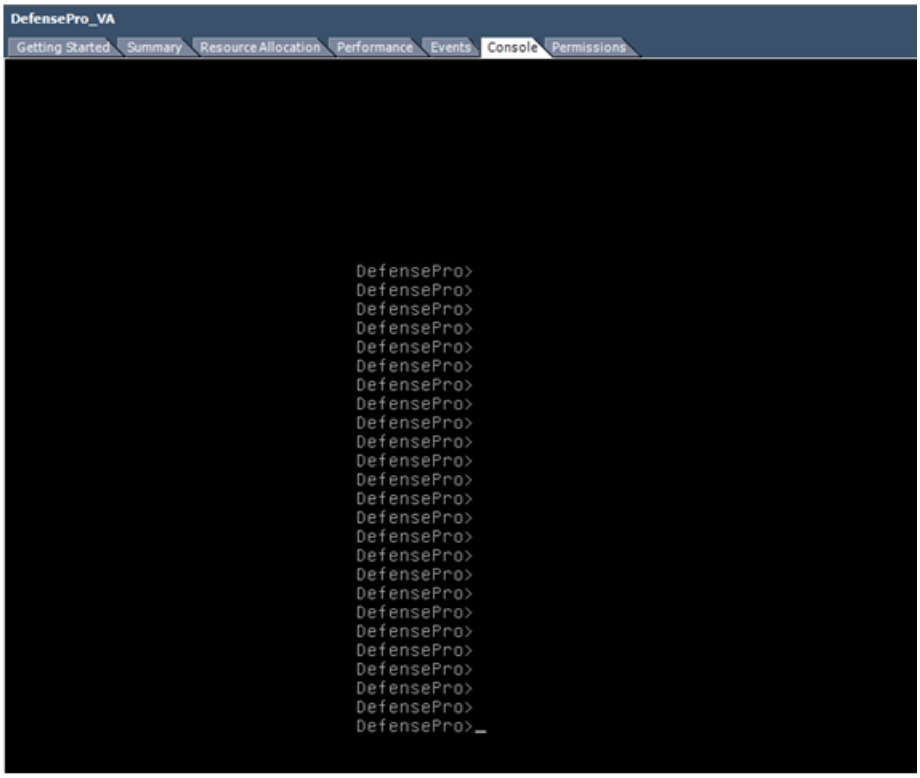


7. Power on the Virtual machine.



8. Log in to the VM console.
   Connect to the servers IP (for example, 10.185.5.112) and use Telnet port 20XX (for example, setup 29 will be 2029).

DP VA Console:



Note: Only one connection to the console is possible at a time. Multiple console sessions are not supported.

Obtaining and Installing a License

DefensePro VA requires a throughput license and a vCPU license in order to function properly.

DefensePro VA is deployed by default with a 60 day temporary license, which allows up to 10M throughput and 2 vCPUs.

After 60 days, traffic will be bypassed and you are required to purchase permanent DefensePro VA throughput and vCPU licenses.

DefensePro VA throughput license options include: 200M, 500M, 1G, 2G, 5G, 10G and 20G.

DefensePro VA vCPU license options include from 4 till 17 vCPUs.

You can obtain permanent licenses from the Radware portal in the Software License Generator page or from Radware Technical Support.

Notes

- To obtain a license from the Radware portal, you must register on the portal using the product's serial numbers. The serial number and/or license notifications are sent to the email address provided during registration/ordering.

- You can obtain a DefensePro VA license based on the MAC address or the IP address of the management interface. If you are planning to migrate the VM, Radware recommends obtaining a license based on the IP address. If the management IP address might change, it may be better to obtain a license based on the MAC address.
- The MAC address and the management IP address can be obtained from the DefensePro VA console.
    - To obtain the MAC address, type the command: **`system device-info`**
    - To obtain the management IP address, type the command: **`net ip`**

To obtain and install a new license

1. In the Radware portal, in the Software License Generator screen (https://portals.radware.com/Customer/Home/Tools/LicenseGeneratorSW/) enter the MAC or IP address, your name and product, select the required version and click **Generate License**. Alternately, you can get the license string from Radware Technical Support.
2. Using the license string, and depending on the license type, enter the command:

   `system license throughput set <throughput license string>.`

   `system license vcpu set <vcpu license string>.`

   For example: **`system license throughput set 10Gbps-XvlkjKwg`**
3. A confirmation message displays when the license installation is complete.

Note: You can also set the license keys through APSolute Vision. For more information, refer to the *DefensePro User Guide*.

Checking License Status

You can view the license information using the commands:

`system license throughput`
`system license vcpu`

CHAPTER 3 – MAINTENANCE AND SOFTWARE UPGRADE

This chapter describes how to maintain, upgrade and recover your DefensePro VA platform and how to upgrade your licenses. It includes the following topics:

Note: For more information on licenses, contact Radware Technical Support.

Rebooting

You can reboot DefensePro VA either through the virsh console or through the DefensePro VA application console.

In DefensePro VA application console, type the command **reboot**

When prompted for approval, type **Yes**

In the virsh console type **reboot <VA name>**

Managing Configuration Files

To ensure off-device configuration backup, you should always save existing configurations of each DefensePro VA instance. You can save the configuration file using APSolute Vision or using the DefensePro VA CLI.

For more details, refer to the *DefensePro User Guide*.

Upgrading DefensePro VA

You can upgrade your DefensePro VA platform with newer software releases. Your maintenance contract determines whether you are entitled to new software versions with new features or only maintenance versions.

Check with Radware Technical Support for version availability before performing software download or upgrade.

Before you can upgrade the platform, you first need to download the new software image file.

Note: Radware recommends performing any required configuration changes, and to save the existing configuration before upgrading.

Downloading the Software Image File

You can download the software image from the website:

https://portals.radware.com/Customer/Home/Downloads/Application-Network-Security/?Product=DefensePro

Select the **Download Software** icon for the product version and platform you want to upgrade and save the file.

Perform the upgrade process using APSolute Vision.

For more details, refer to the *DefensePro User Guide*.

Note: Upgrading the software version for DefensePro VA is identical to the procedure for the DefensePro hardware appliance. For more information, see the *DefensePro Installation and Maintenance Guide*.

An upgrade password is required when you upgrade to a major version. For example, an upgrade from version 8.18.xx to version 8.20.xx.

You must obtain this password before you load the upgrade file onto the DefensePro VA platform. If you do not supply the correct password during the upgrade process, DefensePro VA aborts the upgrade process and reverts to the installed version of software.

You can obtain this password from the website:

http://portals.radware.com/Customer/Home/Tools/password-Generator/

The upgrade password is based on the MAC address of the management interface of the platform and on the version software file size.

An upgrade to a minor version (for example, from 8.18.00 to 8.18.01) does not require a password.

CHAPTER 4 – DEFENSEPRO VA RECOVERY AND LICENSE MIGRATION PROCEDURE

Creating a new VM machine to replace a failed machine (recovery procedure) requires the re-installation of the VA licenses. Because DefensePro VA licenses are dependent on the virtual MAC address or IP address assigned to the original VA, to use the same licenses, the new VA must have the same MAC address or IP address as the original VA. Otherwise, the new VA will need new licenses.

To migrate the VA licenses to the new machine, it is crucial that a list of license strings and MAC address should be maintained for each VA, because in case of disaster the VA licenses and MAC addresses may not be otherwise available.

This chapter describes the procedure for migrating existing VA licenses to a newly installed machine and DefensePro VA recovery procedure in case of disaster recovery.

Note: Do not start the appliance before the procedure is completed. If the appliance is started before the Linux UDEV sub-system recognizes the new MAC addresses and creates a new rule file, if you later change the MAC addresses and start the system again, the UDEV will add the new MAC addresses to the rule file. The new NICs will receive non-acceptable names (eth4, eth5, and eth6).

Recovery and License Migration Procedure over a KVM Hypervisor

This section details the recovery and licensing procedures for DefensePro VA running on a KVM hypervisor.

Recovery Procedure

The following recovery procedure creates a new VM machine to replace a failed machine.

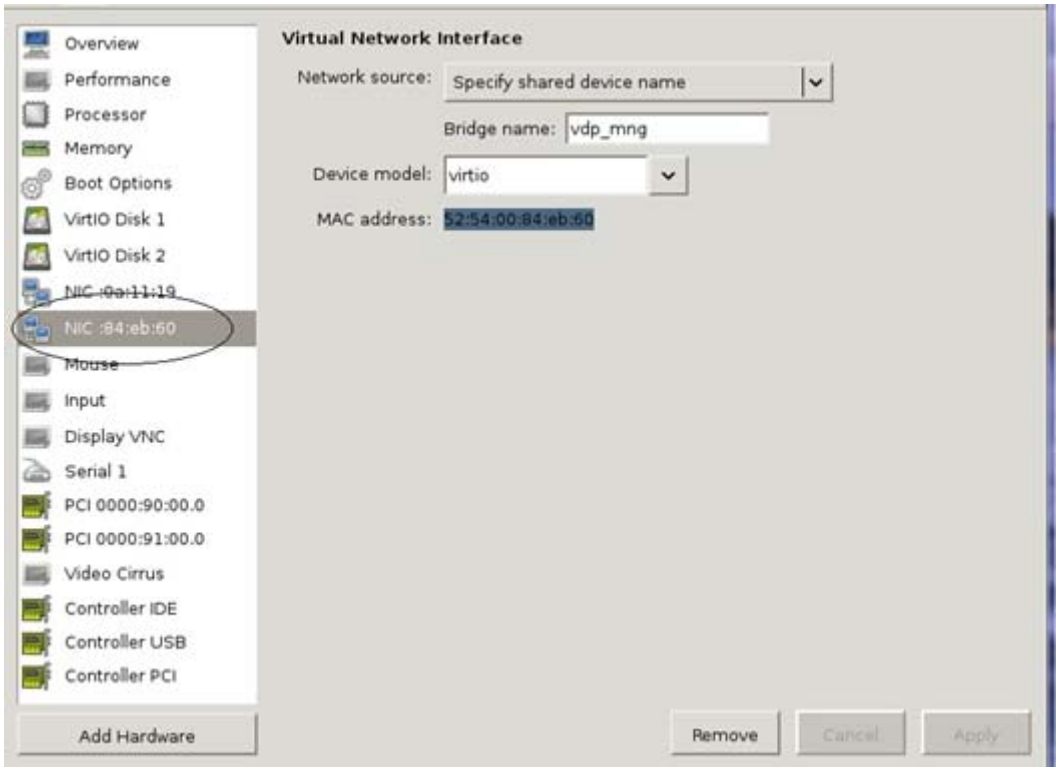
This recovery procedure also includes the re-installation of the VA licenses.

Note: For this procedure, you have to find and record the original MAC addresses in order to perform the recovery procedure. To find the MAC address, you can use a Virtual Machine Manager (virt-manager) which is a graphical tool for creating and managing guest virtual machines.

To perform VA system recovery

1. Install a new machine for the DefensePro VA.
2. Find and record the original MAC address.

   To find the MAC address, use a virt manager application to find the second virtio interface (as shown in the example below).



3. Enter the command **`virsh edit <domain_name>`** to open the KVM domain (VM) XML definition file.
4. Find the MAC address in the XML definition file (as shown in the example below) and manually edit the file to change the MAC address of the new device to match the MAC addresses of the original device.

```
    <alias name='ide0'/>
    <address type='pci' domain='0x0000' bus='0x00' slot='0x01' function='0x1'/>
  </controller>
  <controller type='usb' index='0'>
    <alias name='usb0'/>
    <address type='pci' domain='0x0000' bus='0x00' slot='0x01' function='0x2'/>
  </controller>
  <controller type='pci' index='0' model='pci-root'>
    <alias name='pci.0'/>
  </controller>
  <interface type='bridge'>
    <mac address='52:54:00:0a:11:19'/>
    <source bridge='mng_port'/>
    <target dev='vnet16'/>
    <model type='virtio'/>
    <alias name='net0'/>
    <address type='pci' domain='0x0000' bus='0x00' slot='0x05' function='0x0'/>
  </interface>
  <interface type='bridge'>
    <mac address='52:54:00:84:eb:60'/>
    <source bridge='vdp_mng'/>
    <target dev='vnet17'/>
    <model type='virtio'/>
    <alias name='net1'/>
    <address type='pci' domain='0x0000' bus='0x00' slot='0x06' function='0x0'/>
  </interface>
  <serial type='pty'>
    <source path='/dev/pts/17'/>
    <target port='0'/>
    <alias name='serial0'/>
  </serial>
  <console type='pty' tty='/dev/pts/17'>
    <source path='/dev/pts/17'/>
    <target type='serial' port='0'/>
    <alias name='serial0'/>
  </console>
```

5. Re-install the original licenses by running the command:

   oper/swkey <license key>

CHAPTER 5 – CONFIGURING DEFENSEPRO VA IN PCI PASSTHROUGH MODE

When configuring DefensePro VA, to work in **passthrough** mode, you must associate the physical ports of the host server with the VM running DefensePro VA.

This chapter describes how to identify the physical NIC ports and their associated PCI addresses for DefensePro VA.

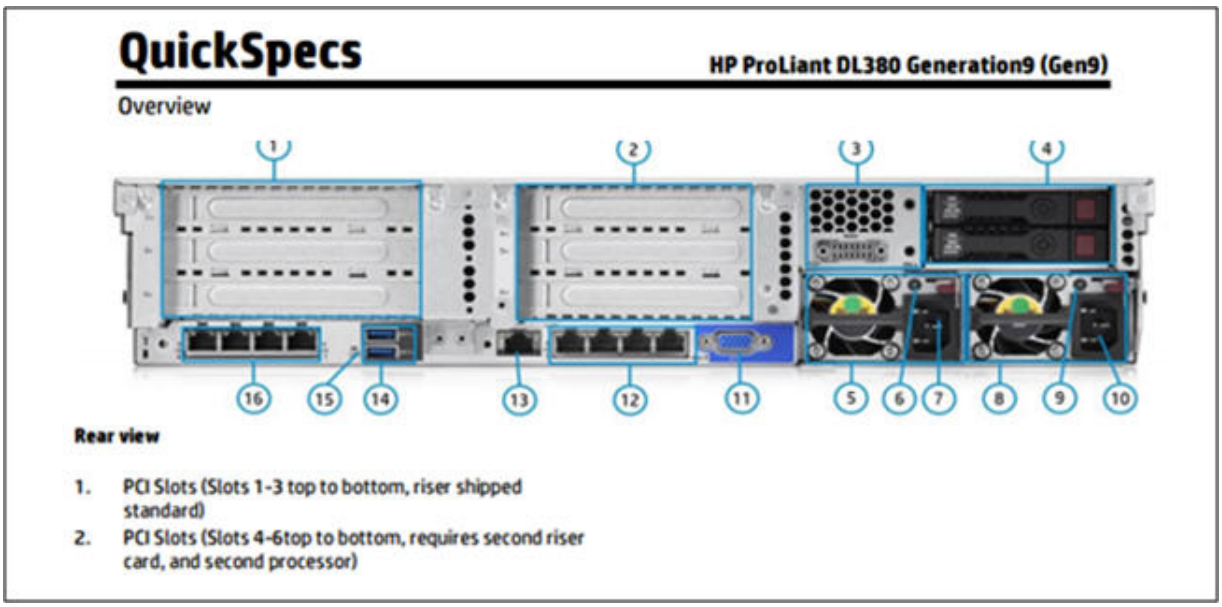
To perform this association, after inserting the NICs, complete the following steps:

1. Validating the PCI Slots, page 75
2. Validating the PCI Slot Addresses, page 76
3. Association of the NIC ports, page 77

Validating the PCI Slots

1. When you insert the PCI NICs into the host server, write down the slot number.
2. For performance optimization, when more than one NIC is used, Radware recommends that you associate the NICs with the first NUMA and move to the second NUMA only once the first one is full.
3. Refer to your server's hardware specification documentation to understand the distribution of the PCI slots among the different processors/NUMA systems. For example, in the HP DL380 Generation9 server (see Figure 19 - HP DL380 Generation9 Server Specifications Example, page 75, below) slots 1-3 (marked (1) in the figure) and slots 4-6 (marked (2) in the figure) are distributed to different NUMA systems:

Figure 19: HP DL380 Generation9 Server Specifications Example



Validating the PCI Slot Addresses

After the NICs are in their slots, determine the PCI addresses of the ports.

The main action in configuring DefensePro VA in passthrough mode is identifying the PCI port addresses of the physical Ethernet ports.

The following procedure is applicable for DefensePro VA running on KVM hypervisor.

A similar procedure is required for DefensePro VA running on VMware.

To configure DefensePro VA in passthrough mode for KVM

1. Run the following Linux command: **`lspci -vv>PCImapping.txt`**

   This command creates a file, **PCImapping.txt**, which includes the PCI mapping of the host (see the example in Figure 20 - PCImapping.txt Example, page 77).

2. In the **PCImapping.txt** file, search for the string "Physical Slot: 5" (for example, if the NIC was inserted into slot number 5).

   In Figure 20 - PCImapping.txt Example, page 77, the string "Physical Slot: 5" is shown marked (1).

3. Above the string "Physical Slot: 5", at the beginning of the section, find the string "Ethernet Controller" (marked (2) in the example).

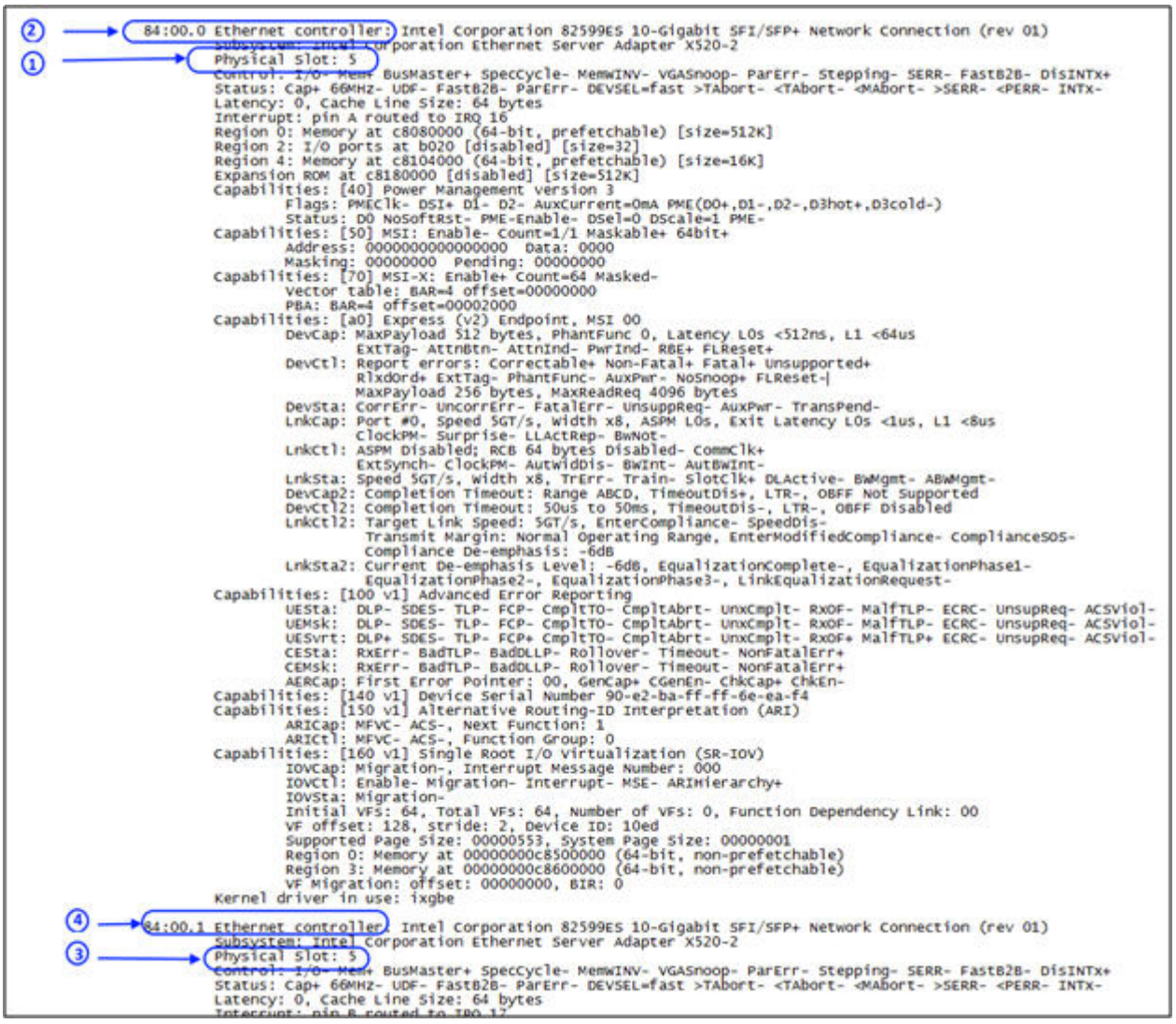
4. The numbers at the beginning of the row ("84:00.0" in the example) are the PCI address of the first port on that slot.

5. Write down the PCI address. You will need it for the installation wizard.

6. Perform step 2 through step 5 to repeat this search for the PCI addresses of all the ports on the slot.

7. Perform step 2 through step 5 to repeat this search for all the NIC slots on your server.

Figure 20: PCImapping.txt Example



Association of the NIC ports

After you have all the PCI addresses written down, continue with the installation detailed in DefensePro VA for KVM Installation and Configuration, page 32.

In the installation wizard in the pane for configuring traffic interfaces, select the PCI ports using the PCI addresses that you wrote down.

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