IBM Netfinity Rack

Planning and Installation Guide

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Note

Before using this information and the product it supports, be sure to read the general information under Appendix B, “Product Warranties and Notices” on page 35.

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Safety Information

Before installing this product, read the Safety Information book.

Antes de instalar este produto, leia o Manual de Informações sobre Segurança.

安装本产品前请先阅读《安全信息》手册。

Prije instalacije ovog proizvoda pročitajte priručnik sa sigurnosnim uputama.

Před instalací tohoto produktu si přečtěte příručku bezpečnostních instrukcí.

Læs hæftet med sikkerhedsforskrifter, før du installerer dette produkt.

Lue Safety Information -kirjanen, ennen kuin asennat tämän tuotteen.

Avant de procéder à l'installation de ce produit, lisez le manuel Safety Information.

Vor Beginn der Installation die Broschüre mit Sicherheitshinweisen lesen.

Πριν εγκαταστήσετε αυτό το προϊόν, διαβάστε το εγχειρίδιο Safety Information.

Installálás előtt olvassa el a Biztonsági előírások kézikönyvét !

Prima di installare questo prodotto, leggere l'opuscolo contenente le informazioni sulla sicurezza.

本製品を導入する前に、安全情報資料を御読みください。

이 제품을 설치하기 전에, 안전 정보 책자를 읽어보십시오.

Пред да го инсталирате овој производ прочитајте ја книгата со безбедносни информации.

Lees voordat u dit product installeert eerst het boekje met veiligheidsvoorschriften.

Les heftet om sikkerhetsinformasjon (Safety Information) før du installerer dette produktet.

Przed zainstalowaniem tego produktu należy przeczytać broszurę Informacje Dotyczące Bezpieczeństwa.

Antes de instalar este produto, leia o folheto Informações sobre Segurança.

Перед установкой продукта прочтите брошюру по технике безопасности (Safety Information).

Pred inštaláciou tohto produktu si prečítajte Informačnú brožúrku o bezpečnosti.

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Preden namestite ta izdelek, preberite knjižico Varnostne informacije.

Antes de instalar este producto, lea la Información de Seguridad.

Läs säkerhetsinformationen innan du installerar den här produkten.

在安裝本產品之前，也請先閱讀「安全性資訊」小冊子。

Danger and Caution References

Important:

All caution and danger statements in this book begin with a number. This number is used to cross reference an English caution or danger statement with translated versions of the caution or danger statement that can be found in the *Caution and Danger Information* book.

For example, if a caution statement begins with a number 1, translations for that caution statement appear in the *Caution and Danger Information* book under statement number 1.

Be sure to read all caution and danger statements in this book before performing any of the instructions.

Importante:

Todos os avisos de cuidado e perigo deste manual começam por um número. Este número é utilizado como referência de um aviso de cuidado ou perigo em inglês para a sua versão traduzida que poderá ser encontrada no *Manual* de Informações de Cuidado e Perigo.

Por exemplo, se um aviso de cuidado começa pelo número 1, a tradução para ele aparecerá. no *Manual* de Informações de Cuidado e Perigo, como aviso número 1.

Certifique-se de ler todos os avisos de cuidado e perigo contidos neste manual antes de seguir qualquer instrução.

重要事项：

本书中所有注意与危险声明都以一个数字开始，该数字用于交叉引用《注意与危险信息》一书中附有译文版本的注意与危险的英文声明。

例如，如果注意声明以数字 1 开始，则该声明的译文将在《注意与危险信息》一书中声明标号 1 的后面出现。

执行任何指令前，务必先要阅读该书中所有的注意与危险声明。

Důležité:

Všechny bezpečnostní instrukce v této knize začínají číslem. Tato čísla jsou používána pro nalezení odpovídajícího překladu anglické bezpečnostní instrukce v knize *Caution and Danger Information*.

Například pokud bezpečnostní instrukce začíná číslem 1, naleznete odpovídající překlad v knize *Caution and Danger Information* pod číslem 1.

Ujistěte se, že jste si přečetli všechny bezpečnostní instrukce z této knihy.

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Vigtigt:

Alle sikkerhedsforskrifter i dette hæfte begynder med et tal. Dette tal bruges som krydshenvisning fra en engelsk sikkerhedsforskrift mærket CAUTION eller DANGER til de oversatte forskrifter, der findes i hæftet *Caution and Danger Information*.

Hvis f.eks. en sikkerhedsforskrift mærket Pas på! begynder med tallet 1, er oversættelsen af denne forskrift nummer 1 i hæftet *Caution and Danger Information*.

Læs alle sikkerhedsforskrifter mærket Pas på! og Fare! i dette hæfte, før du følger nogen af instruktionerne.

Tärkeää:

Kaikkien tämän kirjan Varoitus- ja VAARA-turvaohjeiden alussa on numero, jonka avulla englanninkielistä ohjetta vastaava suomenkielinen ohje löytyy helposti julkaisusta *Caution and Danger Information*.

Esimerkiksi numerolla 1 merkityn varoituksen erikieliset käännökset ovat julkaisussa *Caution and Danger Information* turvaohjeen numero 1 kohdalla.

Lue kaikki julkaisussa olevat turvaohjeet, ennen kuin aloitat ohjeissa kuvatut toimet.

Important:

Dans le présent manuel, toutes les consignes de sécurité Attention et Danger sont précédées d'un nombre qui permet d'établir la correspondance entre la consigne Attention ou Danger en anglais et sa version traduite. Toutes ces consignes se trouvent dans le manuel *Caution and Danger Information*.

Par exemple, si une consigne Attention est précédée d'un 1, les versions de cette consignes, traduites dans plusieurs langues, apparaîtront dans la section des consignes 1 dans le manuel *Caution and Danger Information*.

Veillez à lire toutes les consignes Attention et Danger du présent manuel avant de procéder à toute opération.

Wichtig:

Allen Sicherheitshinweisen in dieser Broschüre geht eine Zahl voraus. Anhand dieser Zahl kann die deutsche Übersetzung eines Sicherheitshinweises dem englischen Original bzw. weiteren Übersetzungen in der Broschüre mit den Sicherheitshinweisen zugeordnet werden.

Geht einem Sicherheitshinweis beispielsweise die Zahl 1 voraus, sind das englische Original und weitere Übersetzungen in der Broschüre mit den Sicherheitshinweisen unter dieser Nummer zu finden.

Vor dem Ausführen von Anweisungen unbedingt alle Sicherheitshinweise in dieser Broschüre lesen.

Σημαντικό:

Όλες οι δηλώσεις προσοχής και κινδύνου στο παρόν εγχειρίδιο αρχίζουν με έναν αριθμό. Ο αριθμός αυτός χρησιμοποιείται για την παραπομπή μεταξύ αγγλικών και μεταφρασμένων δηλώσεων προσοχής και κινδύνου που βρίσκονται στο εγχειρίδιο *Caution and Danger Information*.

Για παράδειγμα, αν μια δήλωση προσοχής αρχίζει με τον αριθμό 1, οι μεταφράσεις για τη συγκεκριμένη δήλωση προσοχής βρίσκονται στο εγχειρίδιο *Caution and Danger Information* κάτω από τον αριθμό δήλωσης 1.

Βεβαιωθείτε ότι διαβάσατε όλες τις δηλώσεις προσοχής και κινδύνου που περιέχονται στο εγχειρίδιο αυτό πριν πραγματοποιήσετε τις εργασίες που περιγράφονται στις οδηγίες.

Fontos:

A könyben szereplő biztonsági utasítások és figyelmeztetések sorszámot viselnek. Ezek alapján lehet megtalálni egy angol nyelvű utasítás magyar megfelelőjét a *Figyelmeztetések és biztonsági előírások* c. könyvben.

Ha például egy figyelmeztetés az 1-es sorszámot kapta, ennek fordítása is az 1-es sorszám alatt található az említett könyvben.

Feltétlenül olvassa el a könyvben található valamennyi biztonsági utasítást és figyelmeztetést, mielőtt hozzálátna az instrukciók végrehatjtásához !

Importante:

Tutti gli avvisi di ATTENZIONE e PERICOLO presenti in questo manuale iniziano con un numero. Tale numero contrassegna gli avvisi in lingua inglese e le corrispondenti versioni tradotte che sono reperibili nell'appropriato opuscolo.

Ad esempio, se un avviso di ATTENZIONE inizia con il numero 1, la corrispondente versione tradotta è riportata nel suddetto opuscolo come l'avviso numero 1.

Accertarsi di leggere tutti gli avvisi di ATTENZIONE e PERICOLO presenti in questo manuale prima di eseguire qualunque istruzione.

重要:

本書中のすべての注意および危険項目は、数字で始まっています。この番号は、英語版の注意または危険項目と *注意および危険情報* 資料中に見られる注意または危険項目の翻訳版を相互参照するために使用されます。

たとえば、注意項目が番号 1 で始まる場合には、その注意項目の翻訳版は、*注意および危険情報* 資料中の項目番号 1 に表示されています。

いかなる指示を実施する場合でも、その前に本書中のすべての注意および危険項目を必ず御読みください。

중요사항

이 책의 모든 경고와 위험사항은 번호로 시작됩니다. 이 번호는 "경고와 위험 정보(Caution and Danger Information)" 책에서 찾을 수 있는 경고 또는 위험사항의 번역된 버전과, 영문판의 경고 또는 위험사항의 참고 자료를 대응시킬 때 사용됩니다

예를 들어, 경고사항이 번호 1로 시작된다면, 그 경고사항에 대한 번역본은 "경고와 위험 정보(Caution and Danger Information)" 책 안의 1번에 있습니다.

지시사항을 실행하기 전에 이 책의 모든 경고와 위험사항에 대한 글을 반드시읽으십시오.

Важно:

Сите изјави за предупредување и опасност почнуваат со некој број во оваа книга. Овој број се употребува за поврзување на англиската изјава за предупредување и опасност со преведената верзија на истата изјава која може да се најде во книгата со изјави за предупредување и опасност *(Caution and Danger Information book)*.

На пример, ако една изјава за предупредување почнува со број 1, преводот на таа изјава се појавува во изјавата со истиот број 1 во книгата со изјави за предупредување и опасност.

Не заборавете да ги прочитате сите изјави за предупредување и опасност во оваа книга пред да преминете на извршување на некоја од инструкциите.

Belangrijk:

Alle waarschuwingen en instructies in dit boek beginnen met een nummer dat telkens correspondeert met een vertaling van de desbetreffende waarschuwing of instructie in het boek *Caution and Danger Information*.

Als voor de instructie bijvoorbeeld het nummer 1 staat, begint de in het boek *Caution and Danger Information* opgenomen vertaling van de desbetreffende instructie eveneens met het nummer 1.

Lees voordat u een instructie uitvoert, alle waarschuwingen en instructies in dit boek zorgvuldig.

Viktig:

Alle advarselsmerknader (CAUTION) og faremerknader (DANGER) i denne boken begynner med et nummer. Dette nummeret brukes som kryssreferanse mellom den engelske advarsels- eller faremerknaden og den oversatte versjonen av merknaden som står i boken *Caution and Danger Information*.

Hvis for eksempel en advarselsmerknad begynner med nummer 1, finner du oversettelsen til denne merknaden i boken *Caution and Danger Information* under merknad nummer 1.

Du må lese alle advarsels- og faremerknadene i denne boken før du utfører noen av instruksjonene.

Ważne:

Wszystkie uwagi i ostrzeżenia znajdujące się w tej książce zaopatrzone są w odpowiednie numery. Numery te używane są do porównania przetłumaczonych uwag i ostrzeżeń z ich odpowiednikami w języku angielskim, które znajdują się w książce *Caution and Danger Information*.

Na przykład, jeżeli ostrzeżenie zaczyna się od numeru 1, jego odpowiednik w języku angielskim znajduje się w książce *Caution and Danger Information* pod numerem 1.

Przed wykonaniem którejkolwiek z instrukcji należy uważnie przeczytać wszyskie ostrzeżenia i uwagi znajdujące się w tej książce.

Importante:

Todas as notas de cuidado e de perigo, incluídas neste manual, começam por um número. Este número é utilizado para, a partir de uma nota de cuidado ou perigo, em Inglês, identificar a respectiva tradução, a qual pode ser encontrada no manual *Informações de Cuidado ou Perigo*.

Por exemplo, se uma nota de cuidado começa pelo número 1, a respectiva tradução é apresentada no manual *Informações de Cuidado ou Perigo*, identificada como nota número 1.

Não deixe de ler todas as notas de cuidado e perigo, incluídas neste manual, antes de executar qualquer das instruções.

Замечание:

Все замечания, помеченные в данной книге словами "Внимание" ("Caution") и "Опасно" ("Danger"), пронумерованы. По этому номеру вы сможете найти перевод нужного замечания "Внимание" или "Опасно" в брошюре Caution and Danger Information (Замечания с предостережениями и предупреждениями).

Так, если вам нужен перевод замечания "Caution" ("Внимание") под номером 1, то вы найдете его в брошюре Caution and Danger Information тоже под номером 1.

Перед тем, как выполнять какие-либо инструкции, обязательно прочтите все замечания, помеченные в этой книге словами "Внимание" ("Caution") и "Опасно" ("Danger").

Dôležité:

Všetky upozornenia a výstrahy v tejto publikácii sa začínajú číslom. Tieto čísla slúžia na prepojenie anglických upozornení a bezpečnostných poznámok s preloženými verziami upozornení a bezpečnostných poznámok, nachádzajúcich sa v publikácii *Upozornenia a bezpečnostné poznámky*.

Napríklad, ke upozornenie začína číslom 1, preklad tejto poznámky sa nachádza v publikácii *Upozornenia a bezpečnostné poznámky* pod číslom poznámky 1.

Pred vykonaním ktorejkovek z inštrukcií, si prečítajte všetky upozornenia a bezpečnostné poznámky v tejto publikácii.

Pomembno:

Vse previdnostne in nevarnostne navedbe v tej knjigi začnejo s številko. Ta številka se uporablja za povezavo z angleško previdnostno ali nevarnostno navedbo, ki jo v prevedeni različici lahko najdemo v knjigi *Opozorilne in nevarnostne informacije*.

Če na primer opozorilna navedba začne s številko 1, se prevod te previdnostne navedbe nahaja v knjigi *Opozorilne in nevarnostne informacije* pod številko 1.

Prepričajte se, da ste prebrali vse previdnostne in varnostne navedbe v tej knjigi, preden izvedete katerokoli od navodil.

Importante:

Todos los avisos de precaución y peligro que aparecen en este manual empiezan con un número. Este número sirve para relacionar la referencia del aviso inglés de precaución o peligro con las versiones traducidas del aviso de precaución o peligro que pueden encontrarse en el manual de *Información de precaución y peligro*

Por ejemplo, si un aviso de precaución empieza con el número 1, las traducciones para ese aviso de precaución aparecen en el libro de *Información de precaución y peligro* bajo el aviso número 1.

Asegúrese de leer todos los avisos de precaución y peligro de este manual antes de llevar a cabo cualquier instrucción.

Viktigt:

Alla varningsmeddelanden i den här boken inleds med ett nummer. Med hjälp av numren kan du identifiera meddelandenas översättningar som finns i ett eget avsnitt i boken.

Om t ex ett varningsmeddelande har nummer 1 hittar du översättningen av det också som meddelande nummer 1.

Läs alla varningsmeddelanden i boken, och referera till den svenska översättningen om du inte förstår originalmeddelandet till fullo.

重要事項：

本書中所有注意與危險事項前面都有一個編號。這個號碼是用來交互參考英文版的注意與危險事項，以及「注意與危險資訊」一書中能找到的翻譯版本之注意與危險事項。

例如，若注意事項前面的編號是 1，則該注意事項的翻譯會出現在「注意與危險資訊」一書中的注意事項號碼 1 之下。

此外，在執行任何指示之前，請務必先閱讀本書中所有注意與危險事項。

About This Book

The information in this book is intended for use by customers and service personnel who plan for, set up, install, relocate, and maintain the IBM Netfinity Racks.

What This Book Contains

This book provides information about the IBM 9306 Model 900 Netfinity Rack and the IBM 9306 Model 200 Netfinity NetBAY22. It contains a product description, a list of available options, option and equipment installation guidelines, cable installation guidelines, and a description of the IBM Netfinity Rack Configurator program. The rack unpacking instructions, the front and rear door removal and installation instructions, and the side panel removal and installation instructions also are included.

You can use the information in this book to help you:

- Plan the arrangement and placement of your Netfinity and PC Server systems.
- Select the options you need for your hardware arrangement.
- Unpack and set up your rack.
- Prepare the rack for the installation of your hardware.
- Understand the guidelines for installing hardware in the rack.

Important

Be sure to keep this book with your rack at all times.

For your convenience, this book and the rack option books are three-hole punched so you can keep them together in one binder.

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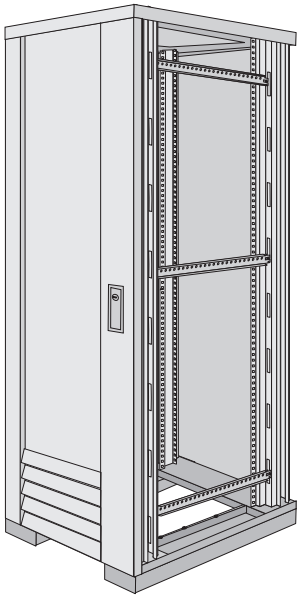
Product Description

The IBM Netfinity Rack enclosures are industry-standard, 19-inch rack cabinets that provide solutions for installing and controlling multiple IBM Netfinity and PC Server systems and related equipment. There are many rack options available to help you to configure the racks for your application.



IBM 9306 Model 900 Netfinity Rack (42-U)

IBM 9306 Model 200 Netfinity NetBAY22 (22-U)

Your IBM Netfinity Rack package contains the following items.

- Rack enclosure
- Front and rear rack enclosure doors
- Two rack side panels (IBM 9306 Model 200 Netfinity NetBAY22 only)
- One front stabilizer bracket
- Four side stabilizer brackets (IBM 9306 Model 900 Netfinity Rack only)
- Twelve stabilizer-bracket mounting bolts (IBM 9306 Model 900 Netfinity Rack only)
- Four stabilizer-bracket mounting bolts (IBM 9306 Model 200 Netfinity NetBAY22 only)
- Miscellaneous parts kit that includes 4 mm and 5 mm hex keys
- Keys for the rack enclosure doors
- *IBM Netfinity Rack Planning and Installation Guide* (this book)
- *IBM Netfinity Rack Unpacking Instructions*
- *IBM Netfinity Rack Caution and Danger Information* book
- *IBM Safety Information* book

The IBM 9306 Model 900 Netfinity Rack has an interior height of 42 U, and will hereafter be called the 42-U rack in this book.

The IBM 9306 Model 200 Netfinity NetBAY22 has an interior height of 22 U, and will hereafter be called the 22-U rack in this book.

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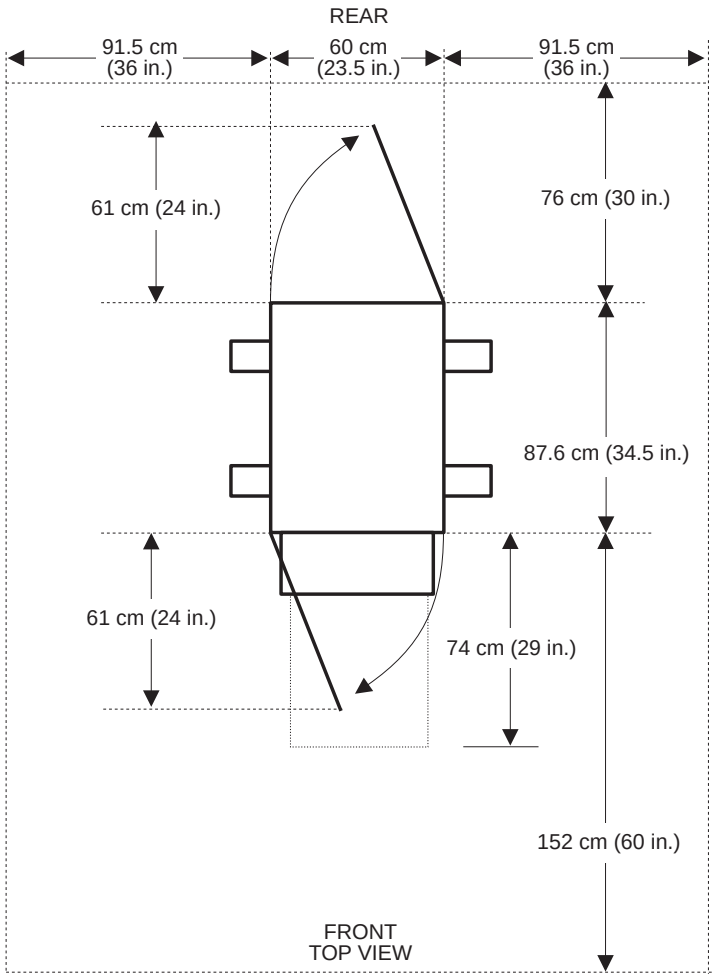
Product Specifications

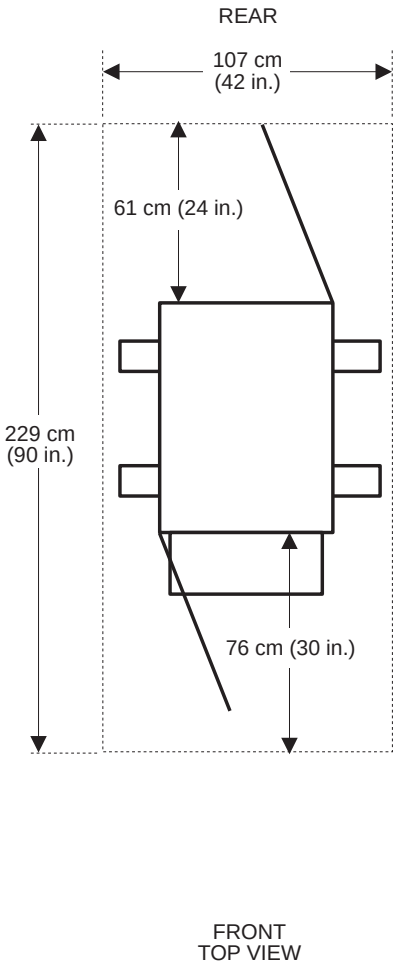
- The dimensions (width x depth x height) of the 42-U rack are:

  Before Unpacking 66 cm x 98 cm x 224 cm (26 in. x 38.5 in. x 88 in.)

  After Unpacking 60 cm x 88 cm x 208 cm (23.5 in. x 34.5 in. x 81.5 in.)
- The maximum weight of the 42-u rack is 136 kg (300 lbs) empty and 771 kg (1700 lbs) fully loaded.
- The 42-U rack requires the following clearances:



SERVICE CLEARANCE



OPERATIONAL CLEARANCE

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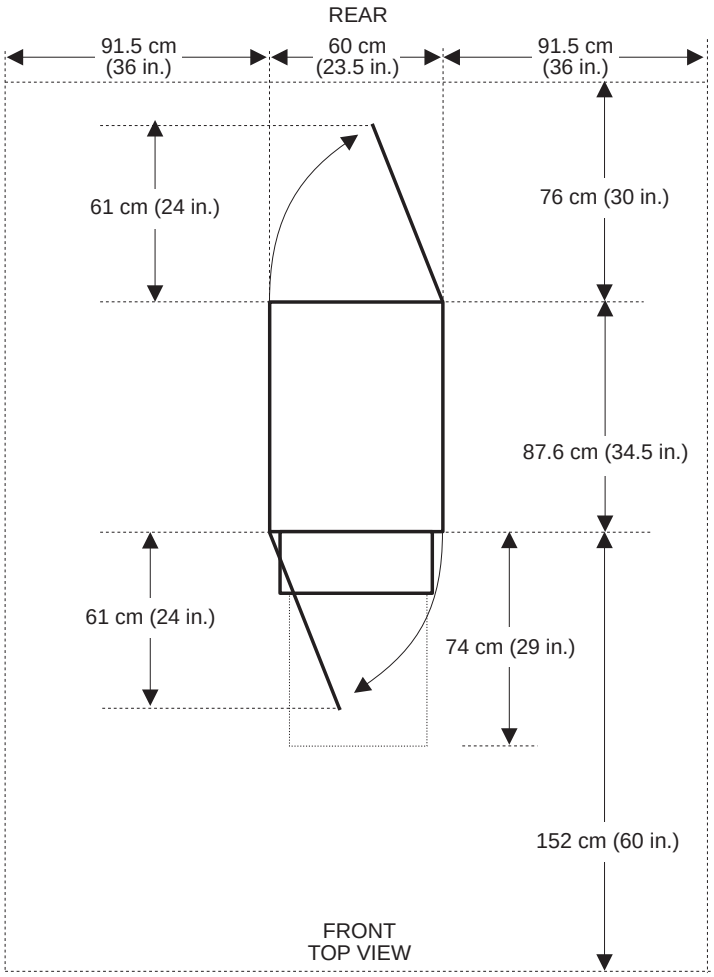
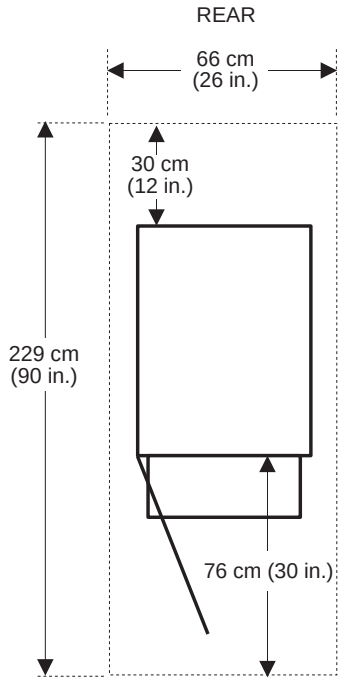
- The dimensions (width x depth x height) of the 22-U rack are:

  Before Unpacking 66 cm x 98 cm x 137 cm (26 in. x 38.5 in. x 54 in.)

  After Unpacking 60 cm x 88 cm x 118 cm (23.5 in. x 34.5 in. x 46.5 in.)
- The maximum weight of the 22-u rack is 82 kg (181 lbs) empty and 424 kg (935 lbs) fully loaded.
- The 22-U rack requires the following clearances:



SERVICE CLEARANCE

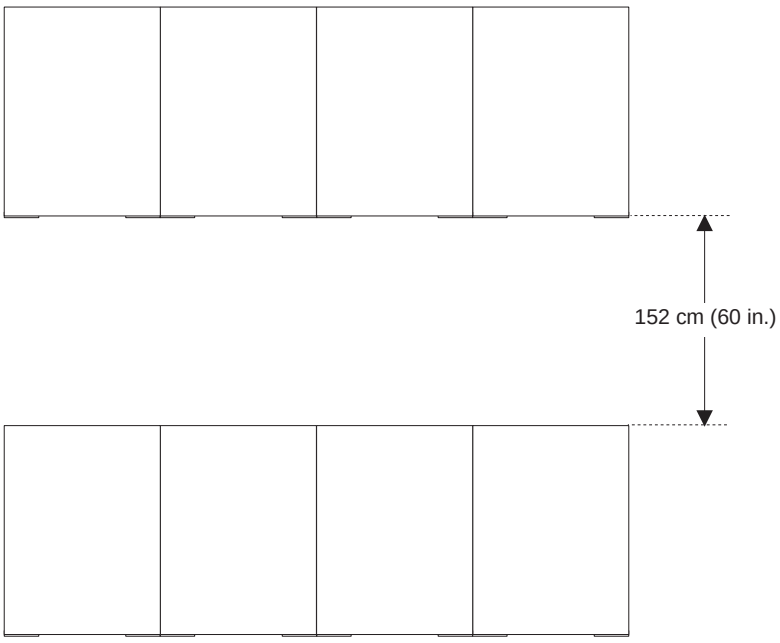


OPERATIONAL CLEARANCE

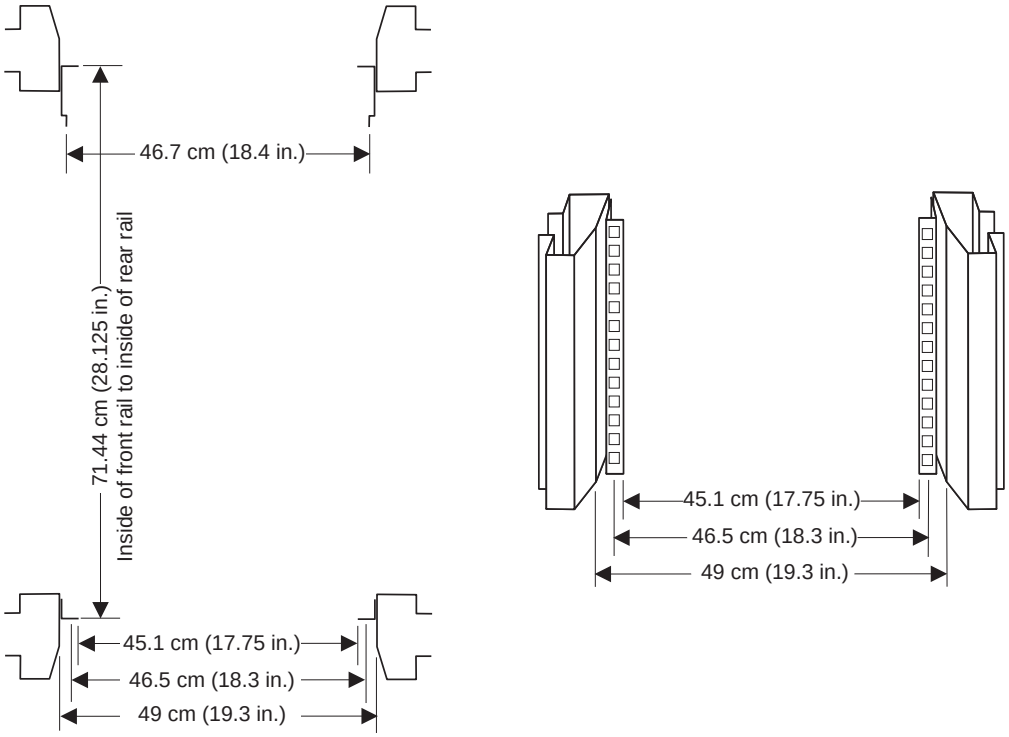
- You need at least 152 cm (60 in.) of space between 42-U rack suites.

  This space is necessary for opening the front and rear doors, and for installing and servicing the rack. It also allows air circulation for cooling the equipment in the rack.

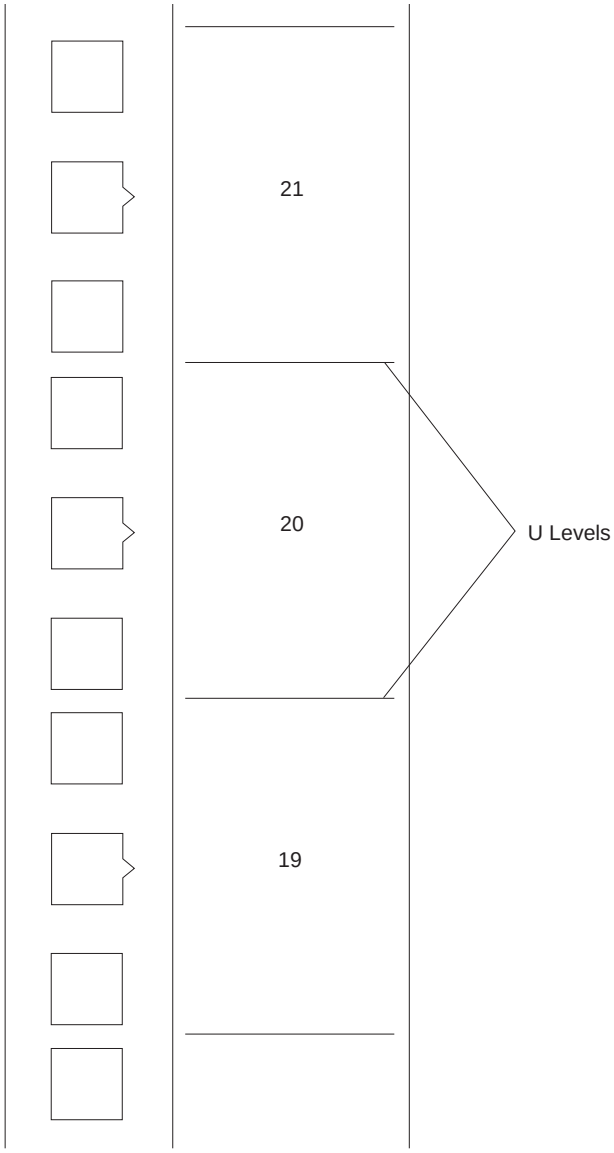
  Note: 22-U racks can be installed next to each other, but cannot be attached to form rack suites.



The internal dimensions of the rack enclosures conforms to EIA (Electronics Industries Association) standard 310D for 19-inch racks. The dimensions are shown below.



All vertical rack measurements are given in rack units (U). One U is equal to 4.45 cm (1.75 in.). The U levels are marked on labels on one front mounting rail and one rear mounting rail.



Preparing the Physical Site

Before you install a rack enclosure, be sure you:

- Understand the rack specifications and requirements
- Prepare a layout for the racks
- Prepare the physical site

General Planning

- Determine:
  - The size of the floor area required by the equipment (see “Product Specifications” on page 2):
    - Floor-load capacity
    - Space needed for expansion
    - Location of columns
  - The power and environmental requirements.
- Create a floor plan to check for clearance problems.
- Make a full-scale template (if necessary) of the rack and carry it along the access route to check for potential clearance problems through doorways and passageways, around corners, and in elevators.
- Provide space for storage cabinets, card files, desks, communication facilities, daily storage of tapes, and other supplies.
- Store all spare materials that can burn in properly designed and protected areas.

Rack Layout

To be sure you have enough space for the racks, create a floor plan before installing the racks. You might need to prepare and analyze several layouts before choosing the final plan.

If you are installing the racks in two or more stages, prepare a separate layout for each stage.

Consider the following when you make a layout:

- The flow of work and personnel within the area.
- Operator access to units, as required.
- If the rack is on a raised floor, position it over a cooling register. The bottom of the rack is open to facilitate cooling.
- If the rack is not on a raised floor:
  - The maximum cable lengths
  - The need for such things as cable guards and ramps to protect equipment and personnel
- Location of any planned safety equipment.
- Expansion.

Begin with an accurate drawing of the installation area (blueprints and floor plans are appropriate).

Be sure to include the following on the layout:

- Service clearances required for each rack or suite of racks.
- If the equipment is on a raised floor:
  - Things that might obstruct cable routing
  - The height of the raised floor
- If the equipment is not on a raised floor:
  - The placement of cables to minimize obstruction
  - If the cable routing is indirectly between racks (such as along walls or suspended), the amount of additional cable
- Location of:
  - Power receptacles
  - Air conditioning equipment and controls
  - File cabinets, desks, and other office equipment
  - Room emergency power-off controls
  - All entrances, exits, windows, columns, and pillars

Review the final layout to ensure that cable lengths are not too long and that the racks have enough clearance.

Electrical Requirements

Note: You might need to consult an electrician to assist you with these plans.

- Each rack requires at least one power unit.
  - Refer to “100–120 V Power Distribution Unit (PDU)” on page 13 and “200–240 V Power Distribution Unit” on page 13 for the power distribution unit (PDU) features.
  - Refer to “APC Smart-UPS Uninterruptible Power Supplies” on page 14 for the uninterruptible power supply (UPS) features.
- Each power unit (PDU or UPS) requires a separate AC power branch circuit.
- Make sure the input voltage-selection switch on each device installed in a rack matches the output voltage of the rack power unit.
- Make sure the correct power outlets are installed to match your rack power plugs.

Important:

Never change a rack power plug.

Limitations

As you prepare the physical site for the rack enclosure, be aware of the limitations of the rack, especially if you plan to install non-IBM equipment in the rack. The following requirements reflect some of the conditions under which the rack and it units were tested for stability and safety. Be sure the rack and its devices meet these requirements. Failure to meet these requirements might result in an unsafe condition.

1

CAUTION:

To ensure safety, all configurations of the rack must be Listed in the U.S.A. and Certified in Canada by a nationally recognized testing laboratory such as Underwriters Laboratory (UL), Canadian Standards Association (CSA), or ETL Testing Laboratories.

Slide Mounted Devices

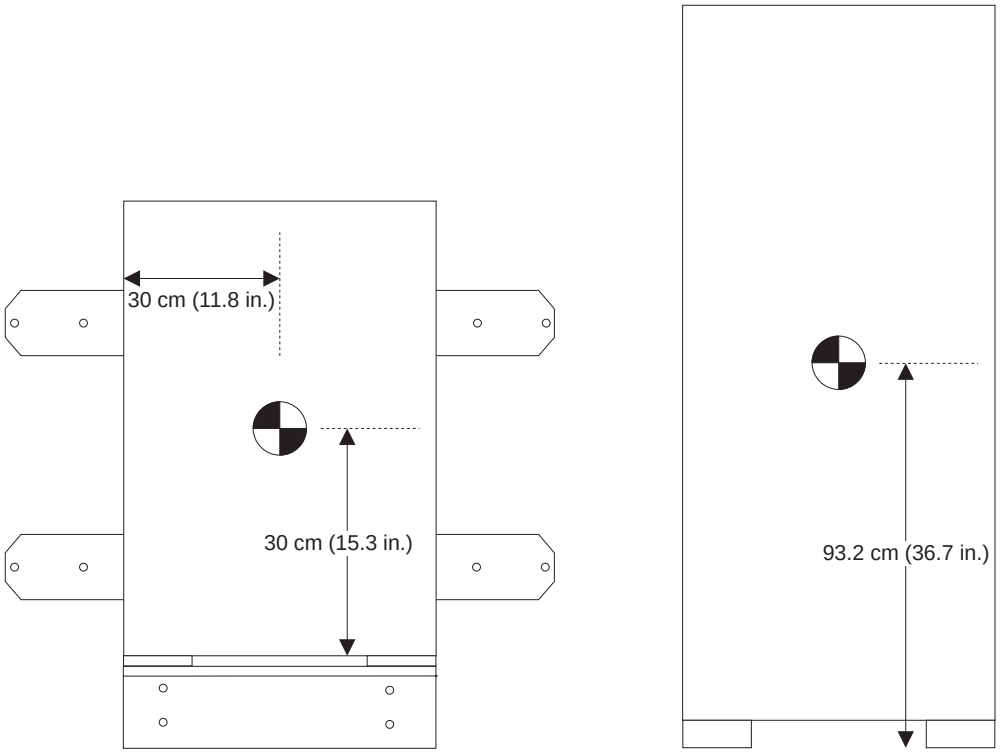
Some devices mount in the rack on slides. You can extend slide-mounted devices.

2

DANGER

- **The maximum allowable weight for devices mounted on slides is 80 kg (176 lbs). Do not install sliding devices exceeding this weight.**
- **The center of gravity for an extended unit cannot exceed 36.2 cm (14.25 in.) from the face of the rack. If an extended device exceeds this distance, the configured rack might be unstable.**

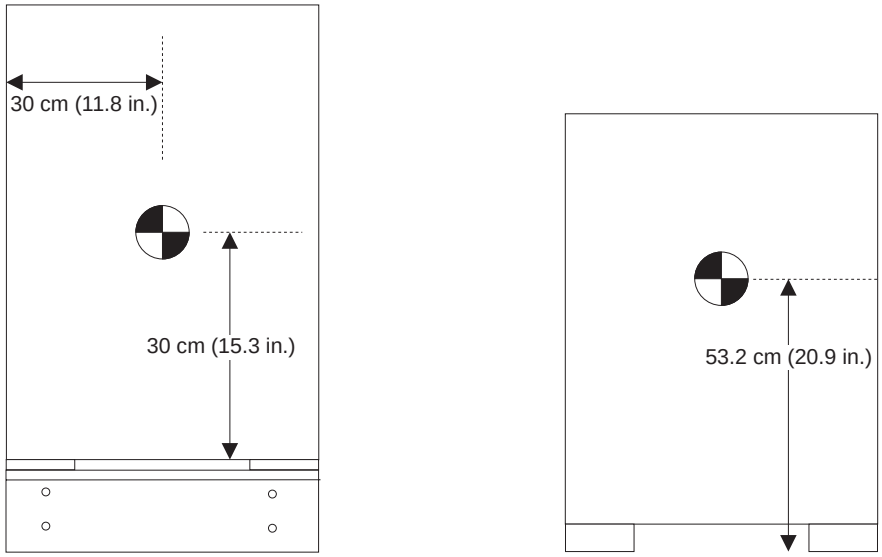
Center of Gravity of a 42-U Rack



TOP VIEW

FRONT VIEW

Center of Gravity of a 22-U Rack



TOP VIEW

FRONT VIEW

Stability

The front stabilizer bracket must always be installed on the 42-U rack. Side stabilizer brackets must always be installed on an individual 42-U rack. Side stabilizer brackets are not required on rack suites of two or more 42-U racks.

The front stabilizer bracket must always be installed on a 22-U rack. Side stabilizer brackets are not provided or required on a 22-U rack.

See step 3 on page 28 for stabilizer bracket installation instructions.

Weight Restrictions

The maximum weight of a 42-U rack with installed devices is 771 kg (1700 lbs).

The maximum weight of a 22-U rack with installed devices is 424 kg (935 lbs).

Weight Distribution for Installed Devices

- The weight of devices that are mounted on the four corner posts must not exceed 14.5 kg (32 lbs) per rack U level.
- The weight of cantilevered devices must not exceed 5 kg (11 lbs).

World Wide Web Information

You can obtain up-to-date information about your IBM Netfinity rack, a complete listing of the options that are supported for you rack, and information about other IBM Netfinity products by accessing the IBM Intel® Processor-based Servers home page at the following address: http://www.pc.ibm.com/us/server

Support information can be found at: http://www.pc.ibm.com/support

Profiling

We will build a customized support page that is specific to your hardware, complete with Frequently Asked Questions, Parts Information, Technical Hints and Tips, and Downloadable Files when you profile your IBM products. To profile, go to the support page listed above and select Profile.

Available Options

The following options are available for use with the IBM Netfinity Rack.

- Fixed Shelf
- 19-Inch Single-Slide Shelf
- Keyboard Tray (with keyboard and mouse extension cables)
- Monitor Compartment
- Rack Attachment Kit (42-U rack only)
- Blank Filler Panel Kit
- Side Panel Kit (42-U rack only)
- Console Cable Set
- Console Server Selector Switches (8-port and 4-port)
- 100–120 V Power Distribution Unit
- 200–240 V Power Distribution Unit
- APC Smart-UPS 1400 Uninterruptible Power Supply
- APC Smart-UPS 3000 Uninterruptible Power Supply
- Power Cables

A list of the latest rack options is available from the IBM Personal Computing Solutions World Wide Web page at http://www.pc.ibm.com/us/accessories/netfinity/rack.html

A description of the options and features follows.

Fixed Shelf

The fixed shelf is capable of supporting 45 kg (100 lbs). The shelf is 44 cm (17.3 in.) wide and 66.5 cm (26.1 in.) deep. The shelf can be used to support miscellaneous devices or for storage.

19-Inch Single-Slide Shelf

The sliding shelf is a heavy-duty sliding tray designed to support tower-type PC systems. The sliding shelf is capable of supporting 68 kg (150 lbs). The capacity is one system per shelf. With optional available mounting plates, the shelf can support the following systems:

- PC Server 9585, 9595
- PC Server 300, 320, 325, 330
- PC Server 500, 520
- PC Server 720
- PC Server 3518 Enterprise Expansion Unit

This shelf can also be used with many EIA (Electronics Industries Association) standard 19-inch by 30-inch racks.

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Keyboard Tray (with keyboard and mouse extension cables)

The keyboard tray is a sliding tray for a keyboard and a mouse. It can support up to 22.7 kg (50 lbs). The tray can hold a keyboard that is 50 cm (19.7 in.) wide, 21 cm (8.25 in.) deep, and 3.8 cm (1.5 in.) high.

A 2.4 m (8 ft) extension cable set is included to connect the keyboard and mouse to the console selector switch.

Note: The keyboard and monitor can be located on top of a 22-U rack.

Monitor Compartment

The monitor compartment provides space for various monitors. It can support up to 34 kg (75 lbs). The inside dimensions of the monitor compartment are 44 cm (17.3 in.) wide and 43 cm (17 in.) deep. Space is provided behind the monitor compartment for the console selector switch.

For convenient viewing, install the monitor compartment at the top of the rack.

Note: The keyboard and monitor can be located on top of a 22-U rack.

Rack Attachment Kit (IBM 9306 Model 900 Netfinity Rack Only)

The rack attachment kit provides brackets, screws, and trim to connect two racks together into a suite. An additional rack attachment kit is required for each additional rack added to the suite.

Blank Filler Panel Kit

The blank filler panel kit provides two 1U panels, one 3U panel, and one 5U panel.

Note: All vertical rack measurements are given in rack units (U). One U is equal to 4.45 cm (1.75 in.).

The panels are used to cover unused mounting space in a rack.

Side Panel Kit (IBM 9306 Model 900 Netfinity Rack Only)

This option consists of two locking side panels. One side panel kit is required for each stand-alone rack or multi-rack suite.

Console Cable Set

This cable set connects a mouse, keyboard, and monitor to the console server selector switch. The video cable supports VGA and SVGA.

Console Server Selector Switch

There are two models of the console server selector switch. Depending on the model, the selector switch connects up to four servers, or up to eight servers to a single console. The switch functions through a keyboard and on-screen configuration control.

Refer to the *IBM Netfinity Rack Console Server Selector Switch User's Guide and Installation Instructions* for detailed information.

100–120 V Power Distribution Unit (PDU)

This PDU has the following features:

- Eight National Electrical Manufacturers Association (NEMA)-15R power outlets
- A fixed 2.7 m (9 ft) power cable with a NEMA L5-15P locking plug
- A 15 amp circuit breaker
- A maximum current rating of 12 amps by Underwriters Laboratory (UL) standards
- A maximum power rating of 1440 volt amperes (VA)
- Electromagnetic Interference/Radio Frequency Interference (EMI/RFI) filtering for common mode noise (line to ground) and differential mode noise (line to line)
- A spike and surge suppression circuit to protect the line

The PDU is 48 cm (19 in.) wide x 4.5 cm (1.75 in.) high x 11.5 cm (4.5 in.) deep and weighs 2.27 kg (5 lbs). The PDU can be installed horizontally in one EIA U space, or vertically in the rack side wall.

200–240 V Power Distribution Unit

This PDU has the following features:

- Ten International Electrotechnical Commission (IEC) 320-C13 outlets
- A maximum current rating of 16 amps by Verband Deutscher Elektrotechniker (VDE) standards
- A maximum power rating of 3200 VA
- A panel mount IEC 320-C20 inlet (16 amps/230 V ac) standard connector
- A detachable power cable with a NEMA L6-20P plug (country specific)
- Ten IEC outlets rated at 10 amps (VDE) or 15 amps (UL/CSA)
  - Eight outlets on the rear panel
  - Two outlets on the front panel
- Conforms to UL1950, Canadian Standards Association (CSA) 22.0-950, and IEC 950
- A 2-pole, 20 amp circuit breaker with time-delay protection; that supports input currents of up to 600 amps without nuisance tripping
- EMI/RFI filtering for common noise (line to ground) and differential mode noise (line to line)
- A spike and surge suppression circuit to protect the line

The PDU is 48 cm (19 in.) wide x 4.5 cm (1.75 in.) high x 17.8 cm (7 in.) deep and weighs 3.63 kg (8 lbs). The PDU can be installed horizontally in one EIA U space, or vertically in the rack side wall.

APC Smart-UPS Uninterruptible Power Supplies

The APC Smart-UPS power supplies are high-performance, line-interactive, uninterruptible power supplies designed to provide reliable AC power to server systems.

Standard features include:

- Sine wave output for compatibility with all loads
- EMI/RFI filtering to eliminate line noise
- SmartBoost to automatically correct brownouts
- SmartTrim to automatically correct overvoltages
- UL 1449 rated for maximum surge suppression
- UL listed, CSA certified, VDE certified, FCC Class B compliant
- SmartSlot for customization of UPS (contact APC)
- Automatic self-testing of battery failure with notification of failure
- Site wiring fault indicator
- Resettable input circuit breaker for equipment protection
- Emergency power off cable for user-provided emergency power-off switch
- Easy battery replacement (kits available from APC)
- Power management software (APC PowerChute Plus)

Smart-UPS 1400 for IBM

- Provides 1400 volt amperes or 950 watts
- Communicates with one server
- Contains four 12 V, 7 ampere-hour batteries

The UPS is 48 cm (19 in.) wide x 13.2 cm (5.2 in.) high x 38 cm (15 in.) deep and weighs 25 kg (55 lbs).

There are two versions of this UPS:

- Model 1400RMB
  - 120 V ac
  - Six NEMA 5-15R receptacles
  - Fixed 1.8 m (6 ft) power cable with a NEMA L5-15P plug
  - Resettable 15 amp circuit breaker
- Model 1400RMiB
  - 220–240 V ac
  - Four IEC 320-C13 receptacles
  - IEC 320-C14 connector for a detachable power cable (country specific)
  - Resettable 12 amp circuit breaker

Smart-UPS 3000 for IBM

- Provides 3000 volt amperes or 2250 watts
- Communicates with three servers
- Contains eight 12 V, 7 ampere-hour batteries

The UPS is 48 cm (19 in.) wide x 13.2 cm (5.2 in.) high x 61 cm (24 in.) deep and weighs 51 kg (112 lbs).

There are two versions of this UPS:

- Model 3000RMB
  - 120 V ac
  - Eight NEMA 5-15R receptacles
  - Fixed 1.8 m (6 ft) power cable with a NEMA L5-30P plug
  - Resettable 40 amp circuit breaker
- Model 3000RMiB
  - 220–240 V ac
  - Eight IEC 320-C14 and one IEC 320-C19 receptacle
  - IEC 320-C20 connector for a detachable power cable (country specific)
  - Resettable 20 amp circuit breaker

APC PowerChute Plus Power Management Software

- Provided with IBM Netfinity and PC Servers on IBM ServerGuide
- Monitors voltages, loads, runtime, and so on through IBM NetFinity
- Manages automatic software alerts and orderly server shutdowns
- Compatible with Microsoft Windows NT, OS/2 Warp, Novell Netware, Santa Cruz Operation, Inc. operating systems

Power Cables

These optional power cables are available to connect IBM Netfinity and PC Servers and other devices to a PDU or UPS in a Netfinity Rack when longer power cables are required.

- Power Cable Type A14
  - Connectors: IEC 320 C13-NEMA 5-15P
  - Length: 4.3 m (14 ft)
  - Used with: 100–120 V ac PDU or 120 V ac UPS
- Power Cable Type B14
  - Connectors: IEC 320 C19-NEMA 5-15P
  - Length: 4.3 m (14 ft)
  - Used with: 100–120 V ac PDU or 120 V ac UPS
- Power Cable Type C12
  - Connectors: IEC 320 C13-C14
  - Length: 3.7 m (12 ft)
  - Used with: 200–240 V ac PDU or 220–240 V ac UPS
- Power Cable Type D12
  - Connectors: IEC 320 C19-C14
  - Length: 3.7 m (12 ft)
  - Used with: 200–240 V ac PDU or 220–240 V ac UPS

IBM Netfinity Rack Configurator Program

The IBM Netfinity Rack Configurator program is a stand-alone program used to configure and validate Netfinity Rack systems. The configurator program provides an intuitive, user-friendly, graphical interface to help you configure the Netfinity Rack system.

You can use the configurator program to obtain the following information:

- Weight and stability limits
- Thermal and heat calculations
- Power requirements
- Internal space dimensions
- External space requirements
- Human factor considerations

You select components from the Component Catalog, and place them in the Picture of the Configuration Notebook to create your configuration. The Configuration Notebook also contains a Parts List, Specifications, and a top-view Floor Plan.

You can configure a single rack, a suite of racks, or a collection of suites, using functions such as Auto Arrange, Validate, and Build for proper placement of components. You can then connect components and select the appropriate cables for connection.

You can identify components as installed then create NetFinity files to assist in system management.

For additional assistance in creating your configuration, you can start IBM ConfigPro or IBM Which Switch? to configure individual components.

You can obtain a copy of the IBM Netfinity Rack Configurator program from either of the following:

- IBM Personal Computing Solutions World Wide Web page at http://www.us.pc.ibm.com/products/netfinity/netfinity_products.html
- IBM PC Company Bulletin Board Service (BBS) at (919) 517-0001

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Rack Option and Equipment Installation Guidelines

Follow these guidelines when installing options and equipment in the rack.

3

IBM 9306 Model 200 Netfinity NetBAY22 (22-U)

DANGER

- **Always install servers and power devices in the rack from the bottom to the top.**
- **Always install the heaviest equipment in the bottom of the rack.**
- **Always install the UPS (uninterruptible power supply) in the bottom of the rack.**
- **Always install the stabilizer bracket.**
- **Do not extend more than one sliding device at a time.**

3

IBM 9306 Model 900 Netfinity Rack (42-U)

DANGER

- **Always install servers and power devices in the rack from the bottom to the top.**
- **Always install the heaviest equipment in the bottom of the rack.**
- **Always install the UPS (uninterruptible power supply) in the bottom of the rack.**
- **Always install the front stabilizer bracket. Side stabilizer brackets are not required on suites of two or more racks.**
- **Do not extend more than one sliding device at a time.**

- Install the keyboard tray, monitor housing, and shelves before installing servers and power devices.
- Install the monitor compartment and monitor at the top of the rack.
- When connecting racks together to form rack suites (42-U racks only), connect the racks together before installing equipment in the racks, if possible.
- Do not place anything on top of a 42-U rack. The exhaust vents must not be blocked.

  The keyboard and monitor can be located on top of a 22-U rack.
- Route power cables so that they enter and exit through the rack bottom. Power cables cannot be routed through the front or rear door openings.
- When installing an IBM PC Server 325 in the rack, always remove the PC Server 325 front door. The server front door might hinder server cooling. The rack's locking front door provides the necessary security for the server.

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4

DANGER

Plug rack power cables into electrical outlets that are located near the rack and are easily accessible.

5

DANGER

Each rack might have more than one power cord. Be sure to disconnect all power cords in the rack before servicing any device in the rack.

6

DANGER

Install an emergency power off (EPO) switch if more than one power device (power distribution unit or uninterruptible power supply) is installed in one rack.

7

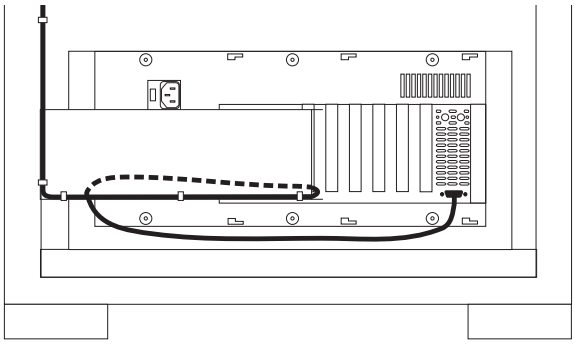
DANGER

Connect all devices installed in a rack to power devices installed in the same rack. Do not plug the power cord from a device installed in one rack into a power device installed in a different rack.

Netfinity Rack Cables Installation Guidelines

Follow these guidelines when installing rack cables.

- When installing cables to devices mounted on sliding rails:
  - Run the cables neatly along equipment cable-management arms and tie the cables to the arms. (Obtain the cable ties locally.)
  - Leave enough slack so the device can be fully extended without putting a strain on the cables.
  - Tie the cables so the device can be retracted without pinching or cutting the cables.



- Run the cables neatly along the rack rear corner posts.
- Use cable ties to secure the cables to the corner posts.
- Make sure the cables cannot be pinched or cut by the rack rear door.
- Run internal cables that connect devices in adjoining racks through the open rack sides.
- Run external cables through the open rack bottom.
- Take particular care when attaching fiber optic cables to the rack. Refer to the instructions included with your fiber optic cables for guidance on minimum radius, handling, and care of fiber optic cables.
- As you install cables in the rack, label each cable with appropriate identification.

The figure on the following page shows examples of how to install and tie the cables in a 9306 Model 900 two rack suite.

Note: Dotted lines indicate hidden cables.

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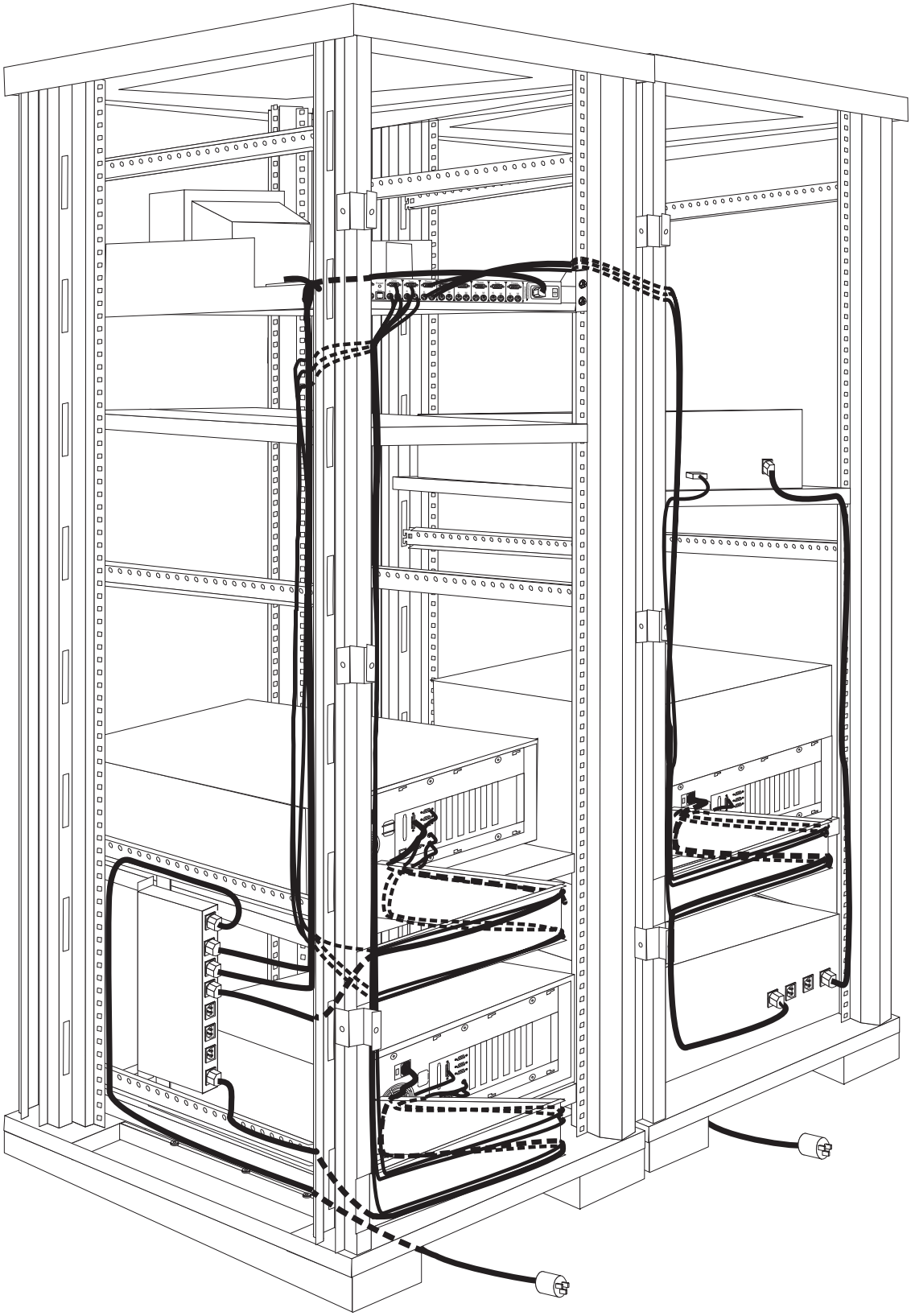
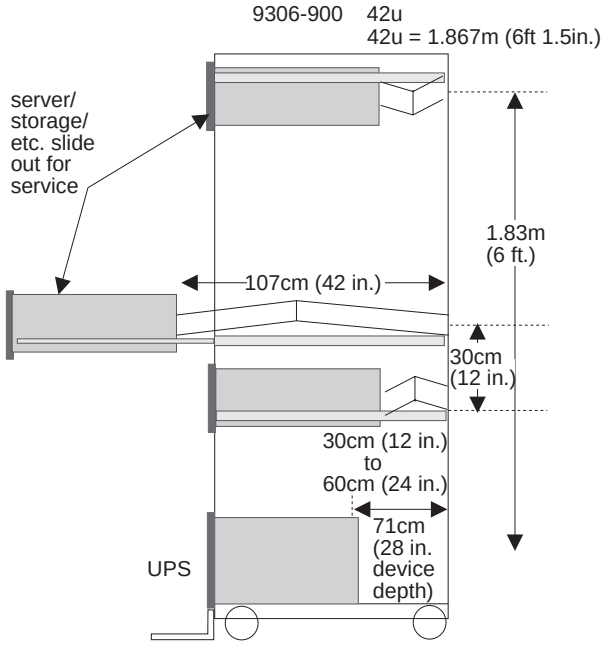
Example of Cable Routing in a 9306 Model 900 Two Rack Suite



Calculating Cable Lengths in One 9306 Model 900 Rack



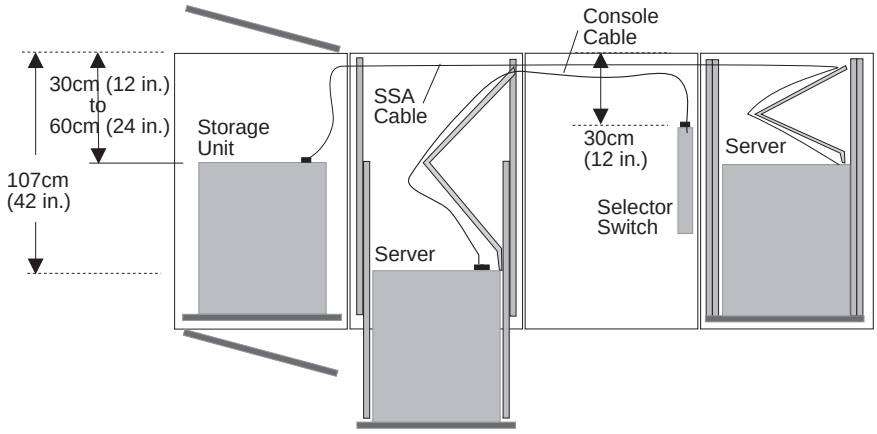
Examples:

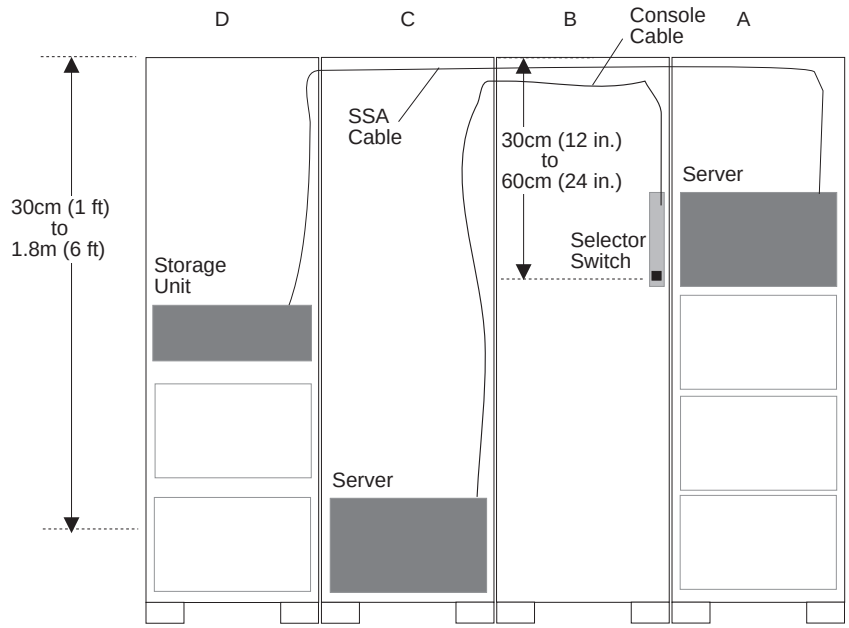
Power Cables
(device must be plugged into power unit in the same rack)

Drawer (on slides) just above UPS	1.7 to 2 m (5.5 to 6.5 ft)
Drawer (on slides) top of rack to UPS at bottom	3.5 m (11.5 ft)

SSA or SCSI Cables	**On Slides**	**Bolt In**
Storage unit just above server drawer	2.4 m (8 ft)	2 m (6.6 ft)
Storage unit at top of rack, server at bottom	4 m (13 ft)	3.5 m (11.5 ft)
Storage unit in adjacent rack	4 m (13 ft)	3.5 m (11.5 ft)
Storage unit in rack, server in another rack, N racks between	13 + (Nx2)	11.5 + (Nx2)
if N=1 then	4.6 m (15 ft)	4.1 m (13.5 ft)
if N=2 then	5.2 m (17 ft)	4.7 m (15.5 ft)

Calculating Cable Lengths in a 9306 Model 900 Four Rack Suite





Examples:

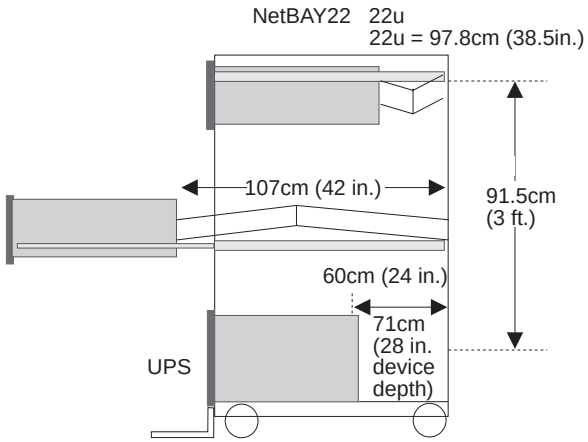
Power Cables (device must be plugged into power unit in the same rack)
Refer to “Calculating Cable Lengths in One 9306 Model 900 Rack” on page 21 for power cable calculation examples.

SSA or SCSI Cables	**On Slides**	**Bolt In**
Storage unit in rack, server in another rack, N racks between	13 + (Nx2)	11.5 + (Nx2)
if N=1 then	4.6 m (15 ft)	4.1 m (13.5 ft)
if N=2 then	5.2 m (17 ft)	4.7 m (15.5 ft)

Console Server Selector Switch Cables

Server in rack, selector switch in another rack, N racks between	3.5 + 1 + (1 to 6) + (1 to 2) + (Nx2)
if N=0 then	2 m (6.5 ft) to 3.8 m (12.5 ft)
if N=1 then	2.6 m (8.5 ft) to 4.4 m (14.5 ft)
if N=2 then	3.2 m (10.5 ft) to 5 m (16.5 ft)
if N=3 then	3.8 m (12.5 ft) to 5.6 m (18.5 ft)

Calculating Cable Lengths in a 9306 Model 200 NetBAY22



Examples:

Power Cables

Drawer (on slides) just above UPS	1.7 to 2 m (5.5 to 6.5 ft)
Drawer (on slides) top of rack to UPS at bottom	2.6 m (8.5 ft)

SSA or SCSI Cables	**On Slides**	**Bolt In**
Storage unit just above server drawer	2.4 m (8 ft)	2 m (6.6 ft)
Storage unit at top of rack, server at bottom	3 m (10 ft)	2.6 m (8.5 ft)

Rack Relocation Safety Guidelines

8

DANGER

A fully loaded rack can weigh up to 771 kg (1700 lbs). A fully loaded rack can be relocated (rolled on the casters) within a room or building.

Take the following precautions before relocating a loaded rack.

- **Reduce the weight of the rack by removing equipment, if possible.**
- **Inspect the route you plan to take and eliminate potential hazards.**
- **Verify that the route you have chosen can support the weight of the loaded rack.**
- **The rack can be rolled through a standard 76 cm (30 in.) by 219 cm (83 in.) door opening.**
- **A minimum of two trained moving or relocation personnel must be used to relocate a loaded rack (one person behind the rack and one person in front of the rack).**
- **Make sure all devices, drawers, doors, and cables are secure.**
- **Make sure the four leveling pads are raised to their highest position.**
- **Make sure the stabilizer bracket is removed.**
- **Do not use a ramp inclined at more than ten degrees.**

A long distance relocation requires the following additional precautions.

- **Remove heavy equipment (servers, UPS) from the rack.**
- **Pack the rack in appropriate packaging material.**

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Unpacking the Netfinity Rack

The rack unpacking instructions are contained in a pouch on the outside of the rack packing material. They are included here also for your convenience. Follow these instructions to unpack the rack.

9

IBM 9306 Model 200 Netfinity NetBAY22 (22-U)

DANGER

The empty rack weighs 82 Kg (181 lbs). Two or more people are required to complete this procedure.

9

IBM 9306 Model 900 Netfinity Rack (42-U)

DANGER

The empty rack weighs 136 Kg (300 lbs). Two or more people are required to complete this procedure.

You will need the following items to unpack the rack:

- Utility knife
- 5 mm hex key (provided in the miscellaneous parts kit that comes with the rack)
- 12 mm open-end wrench

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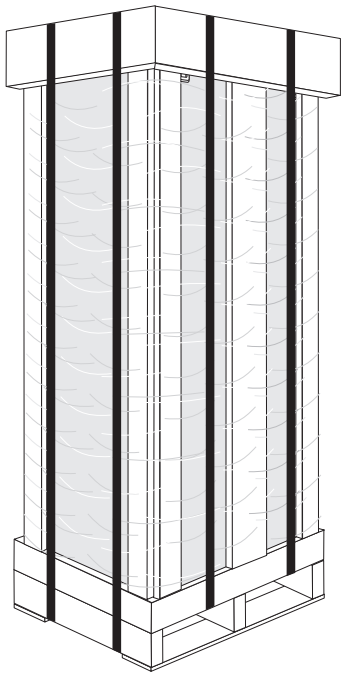
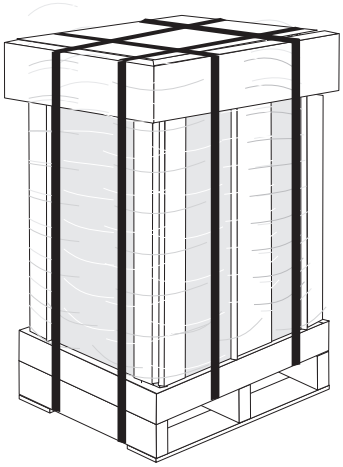
Removing the Packaging Materials



IBM 9306 Model 900 Netfinity Rack (42-U)

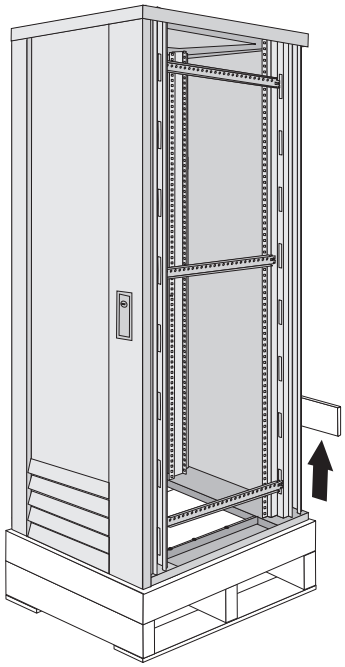


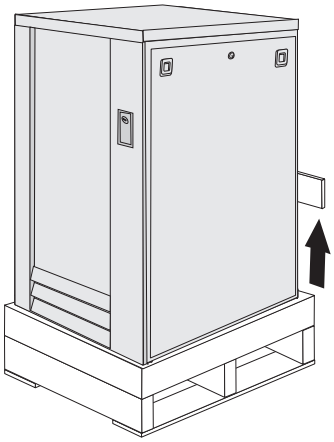
IBM 9306 Model 200 Netfinity NetBAY22 (22-U)

1. Use a utility knife to cut the plastic bands.
2. Use a utility knife to remove the outer plastic wrap. Cut the plastic wrap at the “CUT HERE” mark.
3. Remove the plastic wrap, the cardboard top cover, and the four cardboard corner protectors.
4. Remove the plywood shipping board from the top (22-U rack only).
5. Remove the plastic bag.
6. Remove the box containing the stabilizer brackets and screws from the top of the pallet.

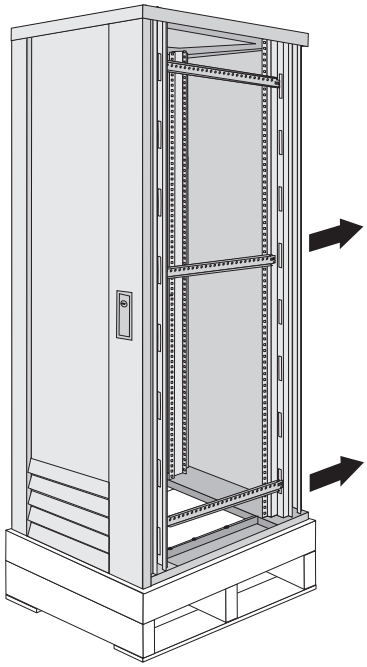
Removing the Rack from the Shipping Pallet

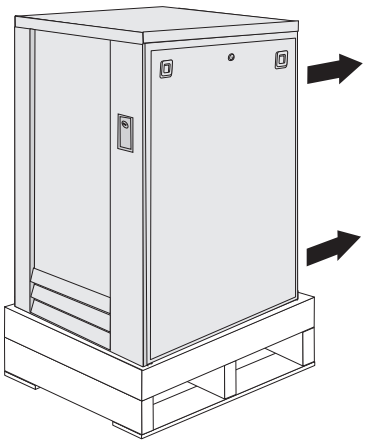
1. Lift the retaining board at the rear of the pallet from its slots. This allows the rack to be rolled off the pallet.





2. With one person on each side of the rack, carefully roll the rack toward the rear of the pallet until the rear casters are off the pallet.

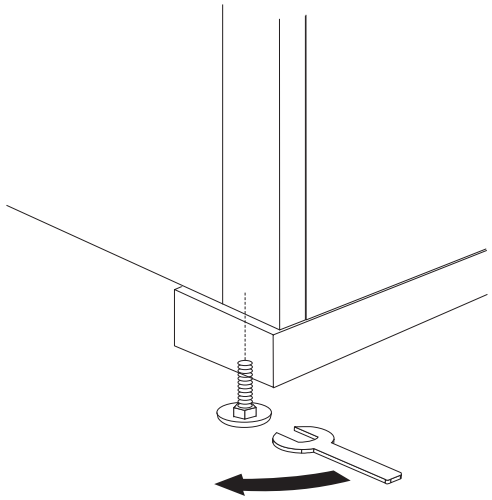




3. Continue to slide the rack off the pallet until the rear casters touch the floor and the front rack casters are off the pallet. Carefully ease the rack off the pallet.

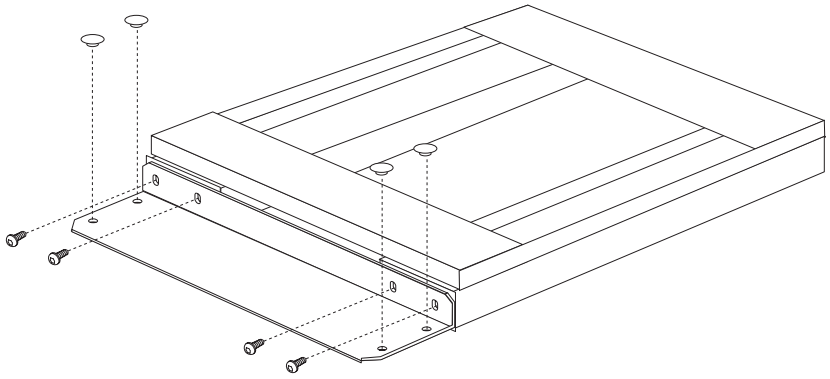
Locating the Rack

1. Roll the rack to the location you selected for installation.
2. Use the 12 mm open-end wrench to lower the four leveling pads until they make firm contact with the floor.



3. Install the front stabilizer bracket.

   Note: The front stabilizer bracket installation is required on both single and multi-rack suite installations.



   a. Place the front stabilizer bracket so the holes in the vertical flange line up with the threaded holes in the rack.

   b. Thread four screws into the threaded holes.

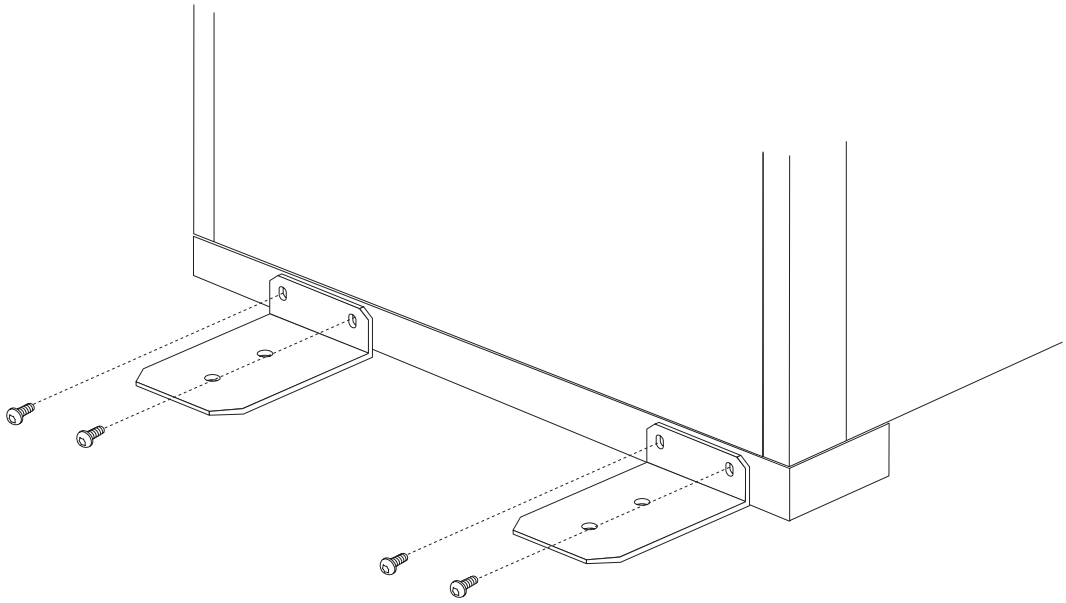
   c. Make sure the front stabilizer is flat against the floor.

   d. Tighten the screws.

   e. Screw the front stabilizer bracket to the floor, if desired, or install the four stabilizer bracket plugs.

4. Install the side stabilizer brackets (42-U racks only).

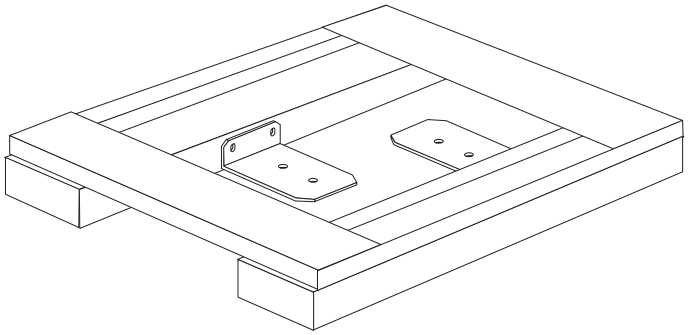
   Note: Side stabilizer brackets are not required on rack suites of two or more racks.



   a. Position two side stabilizer brackets on each side of the rack.

      Instead of installing all four side stabilizer brackets on the outside of the rack, two side stabilizer brackets can be installed inside the rack as shown below.

      Note: The two side stabilizer brackets inside the rack must be screwed to the floor.



   b. Thread two screws through each side stabilizer bracket into the rack.

   c. Tighten the screws.

   d. The four outside side stabilizer brackets can be screwed to the floor, if desired.

Your rack is now in position and secure. You are now ready to:

- Connect additional racks to form a suite of racks.
- Install servers and options.

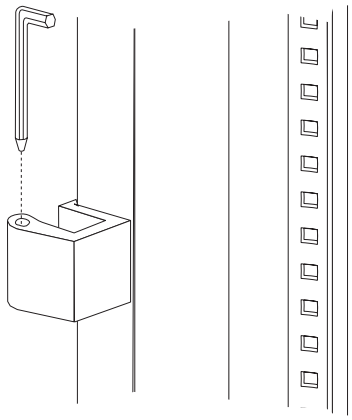
Removing and Installing the Front and Rear Doors

Follow this procedure to remove the front or rear door.

1. If the door is locked, unlock it.

Locked Unlocked

2. Open the door.
3. While supporting the door, remove the hinge pins.



4. Remove the door and carefully set the door aside.

Follow this procedure to install the front or rear door.

1. While supporting the door, line up the door hinges with the rack hinges.
2. Insert the hinge pins.
3. Close and lock the door.

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Netfinity Rack Side Panel Kit Removal and Installation

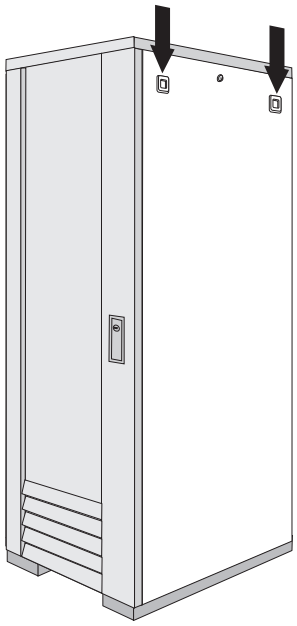
Follow these instructions to remove the side panel.

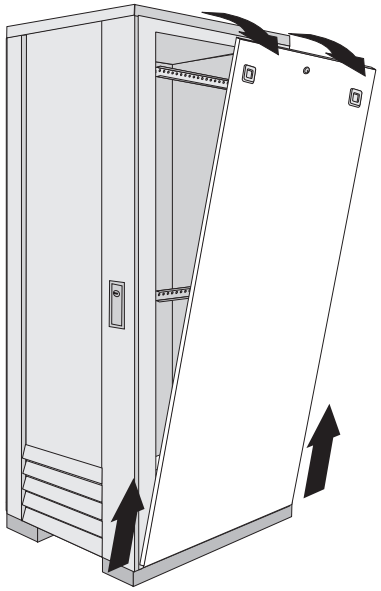
1. If the side panel is locked, unlock it.

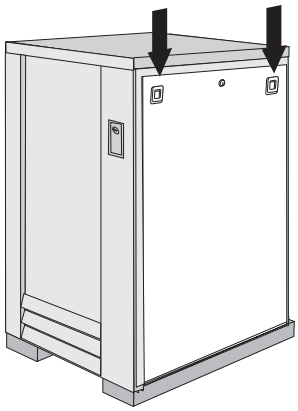
Locked

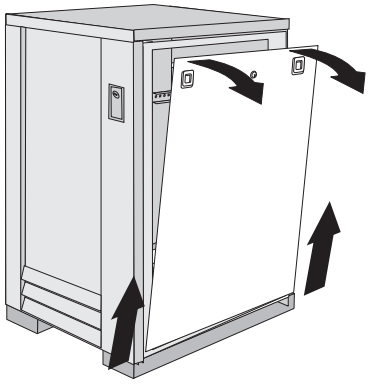
Unlocked

2. Slide the two side-panel latches down to release the top of the side panel.









3. Tilt the top of the side panel away from the rack and lift the side panel off the rack.

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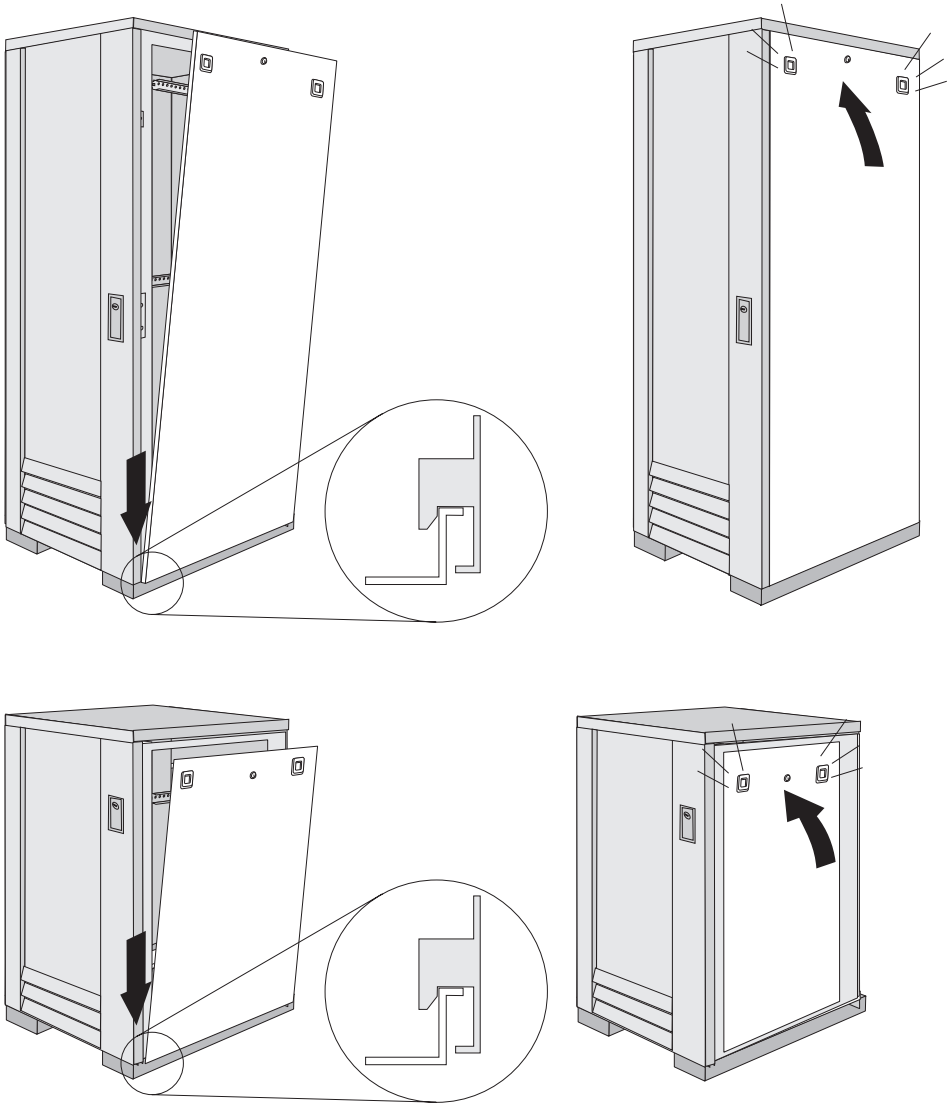
Follow these instructions to install the side panel.

1. Lift the side panel onto the rack mounting rail.



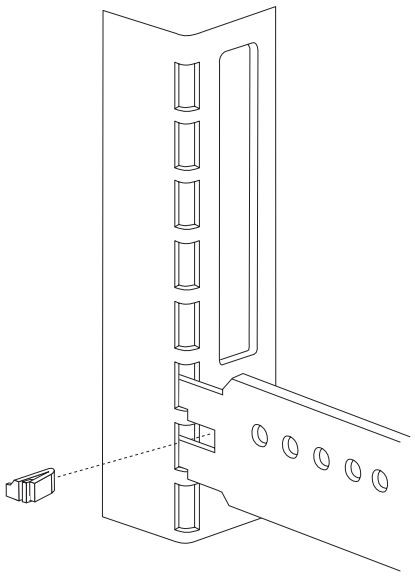
2. Push the top of the side panel against the rack until the side-panel latches snap, securing the side panel to the rack.
3. Lock the side panel if desired.

Locked Unlocked

Removing and Installing the Horizontal Side Braces

The horizontal side braces can be relocated within the rack. Follow this procedure to remove the side brace.

1. Remove the side panel from the rack.
2. Compress the small plastic clip at the front end of the side brace and remove the clip. Save the clip.



3. Lift the side brace up to disengage it from the vertical mounting rails.
4. Slide the side brace toward the rear of the rack and out of the front vertical mounting rail.
5. Slide the side brace toward the front of the rack and remove it from the rear vertical mounting rail.

Follow this procedure to reinstall the side brace.

1. Insert the rear of the side brace into the holes in the rear vertical mounting rail.
2. Insert the front of the side brace into the holes in the front vertical mounting rail.
3. Make sure the ends of the side brace are installed at the same level in both vertical mounting rails.
4. Push the side brace down to latch the ends of the side brace into the vertical mounting rails.
5. Insert the small plastic clip into the front end of the side brace until it snaps in place.
6. Reinstall the rack side panel.

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Appendix A. Help and Service Information

During the warranty period, you can get toll-free technical support 24 hours a day, 7 days a week*, to answer any questions about your Netfinity Rack (toll-free technical support is available in the United States only). If you need warranty service, return or exchange is available. In addition, you might be entitled to service at your location. Your technical support representative can help you determine the best alternative.

Before calling, please prepare for your call by following these steps.

Step 1: Troubleshooting

Before calling IBM, you might want to try some or all of the following troubleshooting procedures.

1. Remove and reattach all cables.
2. Reread any software instructions; be sure software settings are correct.
3. After completing these steps, reassemble the Netfinity Rack and connect the power cord.

Step 2: Preparing for the Service Call

To assist the technical support representative, have the following information available:

1. Option name, description, and serial number
2. Proof of purchase
3. Server model, serial number, and manual
4. Exact wording of the error message (if any)
5. Description of the problem
6. Hardware and software configuration information for your system

If possible, be at your computer. Your technical support representative might want to walk you through the problem during the call.

Step 3: Placing the Service Call to IBM

Use one of the following numbers:

- In the United States and Puerto Rico, call 1-800-772-2227.
- In Canada, call 1-800-565-3344.
- In all other Countries, contact your IBM reseller, IBM marketing representative, or your place of purchase.

* Response time will vary depending on the number and nature of calls received.

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Appendix B. Product Warranties and Notices

The following is the statement of limited warranty for the United States, Canada, and Puerto Rico.

International Business Machines Corporation Armonk, New York, 10504

Statement of Limited Warranty

The warranties provided by IBM in this Statement of Limited Warranty apply only to Machines you originally purchase for your use, and not for resale, from IBM or your reseller. The term "Machine" means an IBM machine, its features, conversions, upgrades, elements, or accessories, or any combination of them. Unless IBM specifies otherwise, the following warranties apply only in the country where you acquire the Machine. If you have any questions, contact IBM or your reseller.

Machine: IBM Netfinity Rack

Warranty Period*: Three Years

**Contact your place of purchase for warranty service information.*

Production Status

Each Machine is manufactured from new parts, or new and used parts. In some cases, the Machine may not be new and may have been previously installed. Regardless of the Machine's production status, IBM's warranty terms apply.

The IBM Warranty for Machines

IBM warrants that each Machine 1) is free from defects in materials and workmanship and 2) conforms to IBM's Official Published Specifications. The warranty period for a Machine is a specified, fixed period commencing on its Date of Installation. The date on your receipt is the Date of Installation, unless IBM or your reseller informs you otherwise.

During the warranty period IBM or your reseller, if authorized by IBM, will provide warranty service under the type of service designated for the Machine and will manage and install engineering changes that apply to the Machine.

For IBM or your reseller to provide warranty service for a feature, conversion, or upgrade, IBM or your reseller may require that the Machine on which it is installed be 1) for certain Machines, the designated, serial-numbered Machine and 2) at an engineering-change level compatible with the feature, conversion, or upgrade. Many of these transactions involve the removal of parts and their return to IBM. You represent that all removed parts are genuine and unaltered. A part that replaces a removed part will assume the warranty service status of the replaced part.

If a Machine does not function as warranted during the warranty period, IBM or your reseller will repair it or replace it with one that is at least functionally equivalent, without charge. The replacement may not be new, but will be in good working order. If IBM or your reseller is unable to repair or replace the Machine, you may return it to your place of purchase and your money will be refunded.

If you transfer a Machine to another user, warranty service is available to that user for the remainder of the warranty period. You should give your proof of purchase and this Statement to that user. However, for Machines which have a life-time warranty, this warranty is not transferable.

Warranty Service

To obtain warranty service for the Machine, you should contact your reseller or call IBM. In the United States, call IBM at **1-800-772-2227**. In Canada, call IBM at **1-800-565-3344**. You may be required to present proof of purchase.

IBM or your reseller will provide certain types of repair and exchange service, either at your location or at IBM's or your reseller's service center, to restore a Machine to good working order.

When a type of service involves the exchange of a Machine or part, the item IBM or your reseller replaces becomes its property and the replacement becomes yours. You represent that all removed items are genuine and unaltered. The replacement may not be new, but will be in good working order and at least functionally equivalent to the item replaced. The replacement assumes the warranty service status of the replaced item. Before IBM or your reseller exchanges a Machine or part, you agree to remove all features, parts, options, alterations, and attachments not under warranty service. You also agree to ensure that the Machine is free of any legal obligations or restrictions that prevent its exchange.

You agree to:

1. obtain authorization from the owner to have IBM or your reseller service a Machine that you do not own; and
2. where applicable, before service is provided —
   a. follow the problem determination, problem analysis, and service request procedures that IBM or your reseller provide,
   b. secure all programs, data, and funds contained in a Machine, and

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c. inform IBM or your reseller of changes in a Machine's location.

IBM is responsible for loss of, or damage to, your Machine while it is 1) in IBM's possession or 2) in transit in those cases where IBM is responsible for the transportation charges.

Extent of Warranty

IBM does not warrant uninterrupted or error-free operation of a Machine.

The warranties may be voided by misuse, accident, modification, unsuitable physical or operating environment, improper maintenance by you, removal or alteration of Machine or parts identification labels, or failure caused by a product for which IBM is not responsible.

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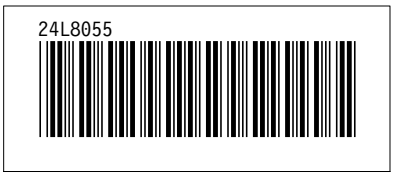
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