



Turbo NAS 疑难排解手册

©Copyright 2011. QNAP Systems, Inc. All Rights Reserved.

此手册提供排除 QNAP Turbo NAS 产品之软硬件问题时可能需要的相关信息，内容适用于固件版本为 V3.0.0 或以上的 Turbo NAS 型号。

法律声明

本公司保留变更产品规格的权利，如有变更，恕不另行通知。本文件中的信息如有变更，恕不另行通知。

威联通、QNAP 及其商标为威联通科技股份有限公司所有。所有其它在本文提及的商标、注册商标，商品名称均为其相关持有人所有。另外，本文将省略®或™符号。

有限保证责任

威联通保证所有出厂的网络服务器皆通过严格而完整的测试，在一般的使用情况下，都可以正常地运作。在保固期限内及正常使用的状况下，如果发生系统故障，威联通将负责维修。除此之外，威联通不保证负责所有因为本产品而造成的数据遗失、毁损、或营业上及执行业务的损失。在任何情况下，威联通所负担的赔偿责任，不超过本产品的售价。

请务必定期备份硬盘中的数据，以避免任何意外、人为操作疏失或硬盘故障所造成的数据毁损。威联通不负任何资料遗失或复原。

如要把 NAS 或任何包装内零件退回或维修，请确定货品妥善包装以确保运送无误。若货品运送期间因不妥善包装造成任何损坏，威联通一概不予负责。



本产品已通过测试并符合 FCC 规则第 15 部分 B 级数位装置之限制。此等限制旨在为家用装置提供免于有害干扰之合理保护所设计。本产品产生、使用、并可能放射无线电频率能量，若未依据指示安装及使用，可能对无线电通讯造成有害干扰。但特定之安装并不保证免于发生干扰。若本产品对收音机、电视之收讯造成有害干扰(可开关设备之电源确认)，建议使用者以下列一种或多种方式改善干扰状况：

- 重新调整或放置接收天线。
- 增加本产品与接收器之间的距离。
- 将本产品连接到与接收器不同的电源插座上。
- 如需协助，请洽询经销商或专业的收音机或电视技术人员。

未经制造厂商许可的变更或修改可能导致使用者丧失操作本产品的权利。

应使用遮蔽线缆以符合 FCC 规则第 15 条 B 款所载之 B 级限制。



本产品符合 CE Class B 规范。

目录

目录.....	4
1. 一般信息.....	5
2. 安全须知.....	6
3. 排除硬件问题.....	7
4. 机身更换.....	8
5. 排除硬盘问题.....	9
6. 排除电源问题.....	11
7. 排除软件问题.....	12
8. ARM 系统 NAS 型号之韧体回复说明	14
9. Intel x86 系统 NAS 型号之韧体回复说明	28
技术支持.....	36
GNU GENERAL PUBLIC LICENSE.....	37

1. 一般信息

您可以在威联通网站或以下连结取得 Turbo NAS 最新的产品兼容信息、韧体更新、技术文件及其它产品信息。

软硬件兼容信息：

http://www.qnap.com/pro_compatibility.asp

NAS 产品更新韧体：

<http://www.qnap.com/download.asp>

应用说明：

http://www.qnap.com/pro_features.asp

FAQ 及 QNAP Wiki：

<http://www.qnap.com/faq.asp>

http://wiki.qnap.com/wiki/Main_Page

2. 安全须知

1. 本产品的工作温度介于 0° C - 40° C，相对湿度为 0% - 95%。请确保其放置场所通风良好。
2. 与本产品所连接的线路和装置必须能提供本产品正常的电量 (100W, 90 - 264V)，以确保其运作正常。
3. 切勿将产品放置在直接受阳光曝晒或靠近化学药剂的场所。请确保其所在环境恒定温度与湿度的维持。
4. 清洁时，先将电源插头及所有线路拔下，再以干布擦拭即可。切勿使用任何化学药剂或喷雾式清洁剂。
5. 为确保机器正常运作，以及避免机器过热，切勿将任何物品或重物放置于机器上。
6. 安装硬盘时，请务必使用平头螺丝将硬盘固定在硬盘抽取盒上，以确保其运作正常。
7. 切勿使产品靠近水源。
8. 切勿将产品放置在不平稳的桌子或台面上，以避免产品滑落而损坏。
9. 使用本产品时，请留意当地的电压指示。若您无法确定，请洽询经销商或当地电力公司。
10. 切勿放置任何物品于电源在线。
11. 切勿自行修护本产品。因为不当的拆装，可能导致触电或其它不良后果。若有任何维修问题，请洽当地经销商。
12. 机架式系统只适用于机房，并应由授权之系统管理员管理及维护。机房必须上锁，并只允许授权人员进入。
13. TS-809U 有两个电源供电，为避免电击危险，操作时需要加倍小心，只有当这两个电源完全断开时才可以安全操作 (进行维修)。



警告：

如错误更换电池，可能会有导致爆炸的危险。更换电池时，请务必更换同类型之电池，或更换制造商建议的类型。请依照当地废弃物管理办法规定，处理使用过之电池组。

切勿触摸系统内之风扇，以避免严重性伤害。

3. 排除硬件问题

Q1. 如何检查及确定系统已故障？

如您的 NAS 无法正常运作，请依照以下步骤检查系统：

将系统的硬盘移除，然后开机。按下电源按钮后，您会听到一声哔声，并在大约两分钟后听到另一声哔声。如您没有听到第二次哔声，代表系统的硬件可能故障，请联络您的经销商或代理商。

注意：请于 NAS 的[系统管理]>[硬件设定]页面启动系统程序（开机、关机及韧体更新）的蜂鸣器警示功能。



注意：系统必须由专业的技术人员维修，请勿自行维修系统。

Q2. 系统的自动备份按钮（USB one touch copy button）无法使用。

请检查以下项目：

1. 自动备份按钮只适用于系统前方的 USB 接口，请确定 USB 外接装置已连接至 NAS 前方的 USB 接口。
2. 以管理者身份登入系统管理页面，在[数据备份] > [USB 单键备份]页面设定备份模式。
3. 在兼容性列表上检查系统是否支持该外接装置：

http://www.qnap.com/pro_compatibility.asp

Q3. 若系统风扇、LCD 屏幕或其它硬件不正常运作，该如何处理？

请勿自行维修或更换系统任何硬件，您应立即联络经销商或代理商，以安排维修或更换服务。

4. 机身更换

Q1. 如 NAS 的机身损毁，该如何处理？

若 NAS 的机身损毁，您可能需要向威联通授权的经销商或代理商购买新的 NAS，然后将原有的硬盘安装至新的系统，所有硬盘数据将被保留。请依照以下程序操作：

1. 确定原来的 NAS 的硬盘并未损毁。
2. 准备与原来的系统相同型号的 NAS，您可以向经销商或代理商查询。
3. 关闭机身损毁的系统。
4. 移除机身损毁之系统内的所有硬盘（包含原来的硬盘抽换盒）。
5. 将硬盘连硬盘抽换盒按原来的次序顺序安装至新的 NAS 内。
6. 将新的 NAS 接上电源并开机，检查系统是否可正常运作。



注意：NAS 必须由专业的技术人员维修，请勿自行维修系统。

5. 排除硬盘问题

Q1. NAS 显示硬盘错误，该如何处理？

1. 以管理者身份登入 NAS 管理页面，于[系统管理] > [系统记录]页面检查是否有这项记录：
“disk drive x failed or is unplugged”
2. 检查系统的 LCD 屏幕（如有）是否显示：disk drive x failed or is unplugged
3. 在系统的[磁盘管理] > [硬盘管理]系统检视是否有硬盘错误信息，如[没有硬盘]。

解决方法：

1. 如硬盘组态为 RAID 1、RAID 5 或 RAID 6：请将 NAS 关机，更换损毁的硬盘，装上新硬盘，然后重新启动系统。NAS 会自动重建 RAID 磁盘组态，成功重建后，NAS 可以回复正常运作，RAID 数据保护功能亦会回复。
2. RAID 10：如 RAID 10 磁盘组态内的其中一颗硬盘或两颗来自不同 RAID 1 组态的硬盘损毁，请将 NAS 关机，更换损毁的硬盘，装上新硬盘后，重新开启系统，NAS 便会开始重建 RAID 磁盘组态。如 RAID 磁盘组态成功重建，系统将可正常运作，RAID 数据保护功能亦会回复。如 RAID 10 内同一组 RAID 1 组态的两颗硬盘同时损毁，数据将无法回复。请更换硬盘并重新建立磁盘组态。

注意：建议您选用相同品牌及型号的硬盘取代损毁之硬盘。

如 RAID 磁盘阵列内损毁之硬盘数目超过上限，磁盘组态将无法重建，硬盘数据亦会遗失。

3. 如硬盘组态为单独硬盘、JBOD 或 RAID 0：将 NAS 关机，更换损毁的硬盘，然后重新启动 NAS。系统完成开机程序后，请以管理者身份登入系统的管理页面，在[磁盘管理] > [系统管理]页面设定硬盘，新安装的硬盘将被格式化，硬盘原来的数据亦将被清除。

注意：损毁硬盘内的数据将无法回复。

更换损毁的硬盘：

1. 从系统内取出硬盘连硬盘抽取盒。
2. 移除硬盘抽取盒内的硬盘，检查硬盘是否损毁。您可以将可能损毁的硬盘抽入其它 QNAP NAS（如有）并检查硬盘是否可被读取。
3. 更换损毁的硬盘。
4. 检查新硬盘的 master 及 slave 设定。

更换硬盘后之硬盘检查：

1. 启动 NAS。
2. 检查 LCD 屏幕（如有）是否出现硬盘错误讯息。
3. 以管理者身份登入 NAS。
4. 在[磁盘管理] > [硬盘管理] 检查硬盘状态，如硬盘的状态为[未格式化]，代表硬盘已正确安装。
5. 要设定新硬盘为单独硬盘，请透过网页管理接口格式化硬盘。
6. 如硬盘组态为 RAID 1、RAID 5 或 RAID 6，NAS 会在重新启动后自动重建磁盘组态。请确定在 RAID 组态重建后可以正确存取 NAS 的数据。

Q2. 系统无法侦测到硬盘，管理页面上显示：hard disk failed or unplugged 可能原因：

1. 系统不支持该硬盘型号，请参考硬盘兼容性列表：
http://www.qnap.com/pro_compatibility.asp
2. 硬盘可能损毁，请更换硬盘。
3. 硬盘插槽可能损毁，请将硬盘插入另一个插槽（如有），然后再试一次。

6. 排除电源问题

Q. 按下电源按钮后，系统仍无法关机。

请确定系统的电源线、变压器及电源供应器已正确连接以及供电正常，如问题仍持续，请联络您的经销商或代理商洽询维修或更换服务。

Q. 我已在 NAS 系统安装两组电源供应器，但当移除其中一组电源供应器时，系统并未记录错误讯息。

请于[系统管理] > [硬件设定]页面检查备援电源供应选项是否已启动。启动后，NAS 将会于[系统记录]页面开始记录有关电源供应器的错误讯息。

Q. NAS 的电源供应器上的红色按钮作用为何？

此红色按钮用于电源供应器错误发生时，重设电源供应器。若您已在[系统管理] > [硬件设定]页面启动备援电源选项，当系统电源供应器无法正常运作时，您可以按下电源供应器上的红色按钮，并检查电源供应是否运作正常。如电源供应器错误持续，请联络经销商或代理商的技术人员。

7. 排除软件问题

Q. 我已连接 NAS 及计算机至相同的网域，但 Finder 仍无法找到系统。

请确定您的 NAS 及计算机已连接至相同的网域。如您使用 Windows XP SP1，请依照以下步骤操作：

1. 在[控制台] (Control Panel)的[类别检视] (Category View)模式下选择[网络联机设定] (Network and Internet Connections)或在[控制台] (Control Panel)的[传统检视] (Classic View) 模式下选择[网络设定] (Network Settings)。
2. 点选 Network Connections，然后双击网络联机图标。
3. 点选 Properties，然后选择 Advanced。
4. 取消 Internet Connection Firewall 选项。
5. 重新安装 Finder 并再次寻找系统。

如您使用 Windows XP SP2，在执行 Finder 时，按一下[解除封锁] (Unblock)即可。Windows 7 使用者可按[Allow access]解除 Windows 防火墙的封锁。如仍无法找到系统，请检查是否仍有其它防毒程序或防火墙正在使用，请关闭这些程序，然后再次执行 Finder。

如仍无法透过 Finder 找到 NAS，或在网页浏览器输入 NAS IP 后仍无法联机，请执行以下步骤：

1. 检查您的网络线以及 NAS 的 LAN LED 是否正在闪烁。
2. 检查系统的状态 LED (或电源 LED) 是否亮绿色。
如状态或电源 LED 闪烁红色或红绿色交叉闪烁，代表系统仍未被初始代或硬盘未预备好。
3. 按 NAS 的重设按钮 3-4 秒重设系统，系统的管理者密码及网络设定将回复至出厂值 (使用 DHCP 联机，登入名称及密码为 admin)。
系统重新启动并发出两次哔声后，请再次执行 Finder 寻找 NAS，或开启网页浏览器并输入 `http://NAS_IP:8080`。如您的 NAS 直接连接至计算机，可以输入预设 IP 地址：169.254.100.100:8080
4. 如在第 3 步后仍无法联机至 NAS，请依照以下步骤操作。
 - a. 将 NAS 关机。
 - b. 取出系统内所有硬盘，重新启动 NAS。

按下电源按钮后，系统会发出一声哔声，两分钟后再发出两声哔声。如您无法听到第二次的哔声，代表系统发生错误，请联络您的经销商或代理商安排维修及更换服务。

8. ARM系统NAS型号之韧体回复说明

适用 QNAP NAS 型号：TS-110、TS-112、TS-119、TS-210、TS-212、TS-219、TS-219P、TS-410、TS-410U、TS-412、TS-412U、TS-419P、TS-419U、TS-419U+、TS-119P+、TS-219P+及 TS-419P+。

如使用者在更新系统韧体时因停电或网络联机中断导致韧体更新失败，可参考此说明回复系统韧体。要确定本说明适用于您的 NAS，请先照以下步骤检查系统状态。

- a. 将 NAS 关机。
- b. 移除系统内所有硬盘。
- c. 启动 NAS。
- d. 等候约十秒，您会听到一声短哔声。
- e. 短哔声后两分钟，系统会再发出一声长哔声。
- f. 如您只听到短哔声，或没有听到任何哔声，请依照此说明回复 NAS。

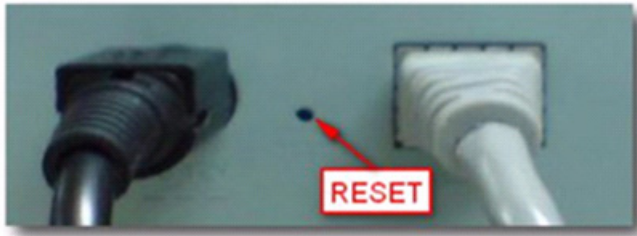
请依照以下步骤回复 NAS：

1. 请透过以下连结下载系统的 CD ISO（光盘映像文件）：
 - a. TS-110、TS-119、TS-210、TS-219 或 TS-219P
[ftp://csdread:csdread@ftp.qnap.com.tw/NAS/live_cd/Flash_Reburn_live-cd-2009-09-24\(TS-110&119&210&219&219P\).iso](ftp://csdread:csdread@ftp.qnap.com.tw/NAS/live_cd/Flash_Reburn_live-cd-2009-09-24(TS-110&119&210&219&219P).iso)
 - b. 一、二或四颗硬盘 NAS 型号
[ftp://csdread:csdread@ftp.qnap.com.tw/NAS/live_cd/Flash_Reburn_live-cd-2009-12-09\(TS-410&410U&419P&419U\).iso](ftp://csdread:csdread@ftp.qnap.com.tw/NAS/live_cd/Flash_Reburn_live-cd-2009-12-09(TS-410&410U&419P&419U).iso)
 - c. TS-119P+、TS-219P+或 TS-419P+
[http://us1.qnap.com/Storage/tsd/live-cd-2010-10-08.\(TS-x19P+_Recovery\).iso](http://us1.qnap.com/Storage/tsd/live-cd-2010-10-08.(TS-x19P+_Recovery).iso)
 - d. TS-112/212/412/412U/419U/419U+
[http://us1.qnap.com/Storage/tsd/live-cd-2011-03-02\(TS-x12_412U_419U_419U+\).iso](http://us1.qnap.com/Storage/tsd/live-cd-2011-03-02(TS-x12_412U_419U_419U+).iso)

注意：如使用一或二颗硬盘的 NAS 型号（TS-110/210/119/219/219P），请使用 CD ISO（a）。如无法回复 NAS 韧体，请使用 CD ISO（b）再试一次。

2. 将 ISO 映像文件烧成 CD 光盘片。
3. 将 CD 光盘片插入计算机，并透过光盘片开机。

4. 登入窗口显示时，请直接前往下一步，无需输入任何登入信息。
5. 关闭 NAS 及移除所有硬盘。
6. 使用网络线将 NAS 直接连接至计算机。如您的 NAS 提供两个网络接口，请透过 LAN 2 将 NAS 联机至计算机。
7. 以笔尖或其它尖物按压系统的重设按钮（如下图标）。



8. 按压 NAS 的电源按钮约 5-8 秒，直至听到两声短哔声，系统的状态 LED 会交叉闪烁红绿色，然后亮红色。
9. NAS 的 LAN LED 会闪烁几秒，然后亮红色。
10. 此时，请勿对 NAS 进行任何操作、关机或拔除电源线。请等候约五分钟。
11. 待 NAS 发出一声长哔声或两声短哔声，以及状态 LED 闪烁绿色。系统会重新启动，此时，您无需进行任何操作。
12. 重新启动系统约需三分钟，之后会听到一声长哔声。
13. 将 NAS 连接至 switch 或 router，然后使用 QNAP Finder 寻找 NAS。

如问题持续，该如何处理？

如系统启动问题仍无法解决，请尽快联络经销商或代理商安排维修服务。

适用 QNAP NAS 型号：TS-239 Pro、TS-239 Pro II、TS-239 Pro II+、TS-439 Pro、TS-439 Pro II、TS-439 Pro II+、TS-259 Pro、TS-259 Pro+、TS-459 Pro、TS-459 Pro+、TS-459 Pro II、TS-459U、TS-459U+、TS-559 Pro、TS-559 Pro+、TS-559 Pro II、TS-659 Pro、TS-659 Pro+、TS-659 Pro II、TS-859 Pro、TS-859 Pro+、TS-859U、TS-859U+、TS-509、TS-809、TS-809U、SS-439 及 SS-839。

如使用者在更新系统韧体时因停电或网络联机中断导致韧体更新失败，可参考此说明回复系统韧体。要确定本说明适用于您的 NAS，请先照以下步骤检查系统状态。

1. 将 NAS 关机。
2. 移除系统内所有硬盘。
3. 连接一个 VGA 屏幕及一个 USB 键盘至 NAS。



4. 启动 NAS。

AMI BIOS ...: 以下屏幕显示 NAS 的 BIOS 可正确地开机。

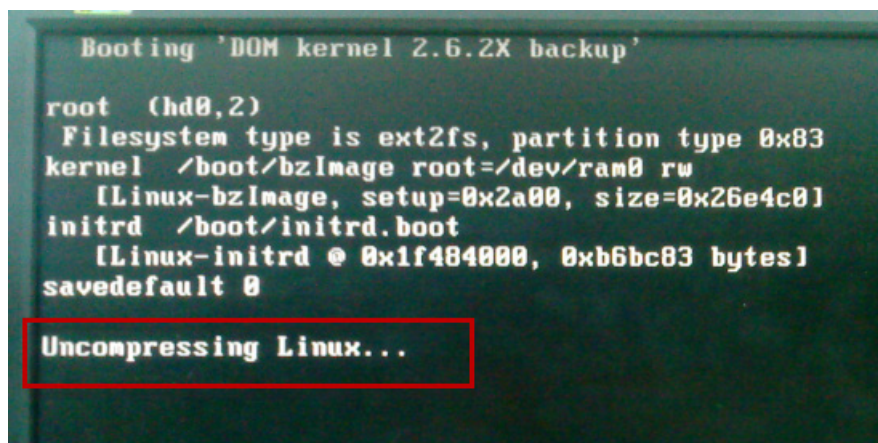
1023MB OK: DRAM 已被侦测 (DRAM 大小视 NAS 型号而定。)

128MB ATA Flash Disk ADAA408J: DOM 已被侦测 (DOM 大小视 NAS 型号而定。)



如 BIOS 无法开机或任何组件, 如 DRAM 或 DOM 无法被侦测, 请即联络经销商或代理商进行维修。如移除硬盘后 NAS 可正常开机, 请更换硬盘并再次启用 NAS。

5. 如屏幕显示 “Uncompressing Linux...”, 代表 DOM 正在开机。但若系统已损毁, 将会在开机过程出现错误讯息。您可以依照以下说明回复系统。

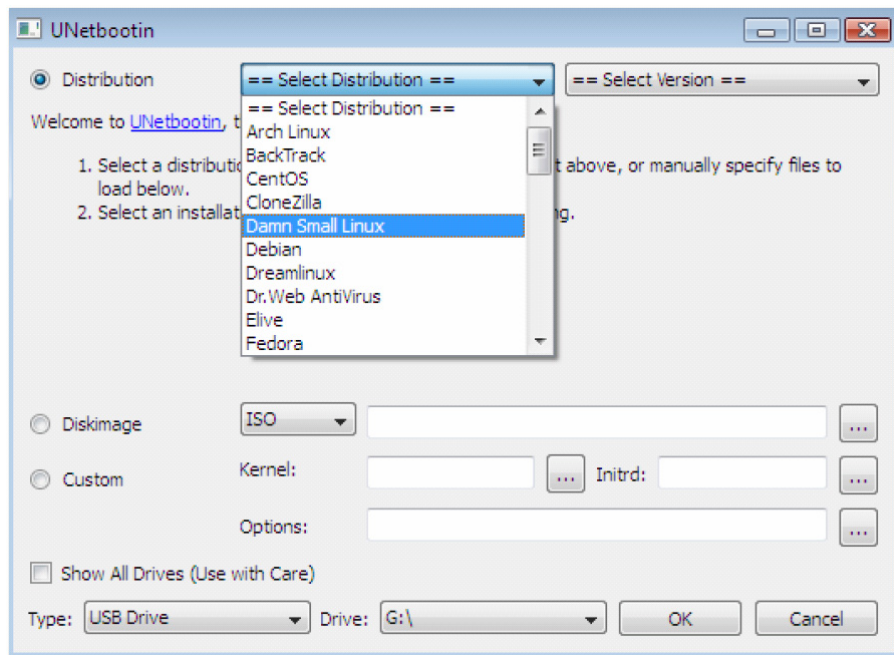


6. 要回复在 DOM 上的系统档案，请依照以下 A 及 B 的说明操作。

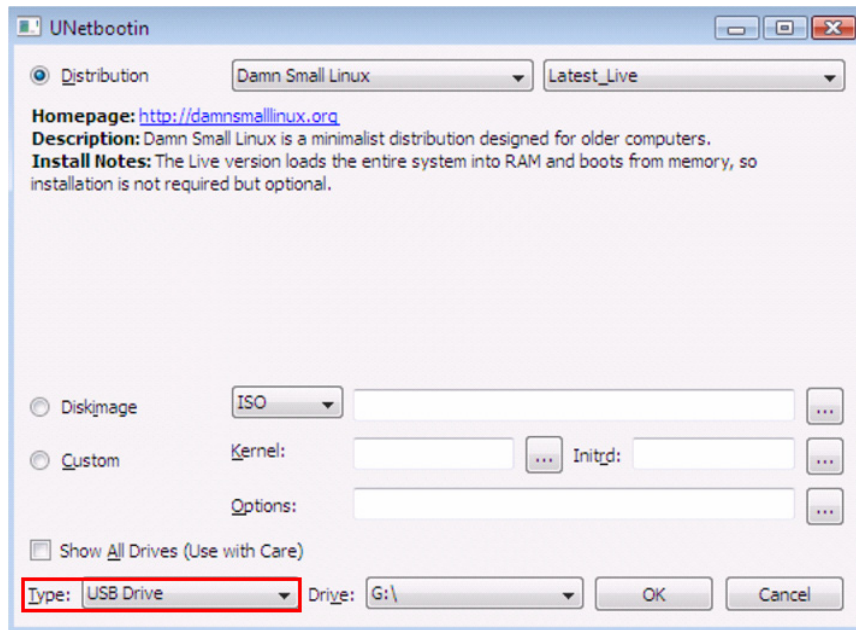
- A. 建立可开机的 USB 磁盘
- B. 使用 USB 开机磁盘重烧 NAS 的 DOM

A. 建立可开机的 USB 磁盘

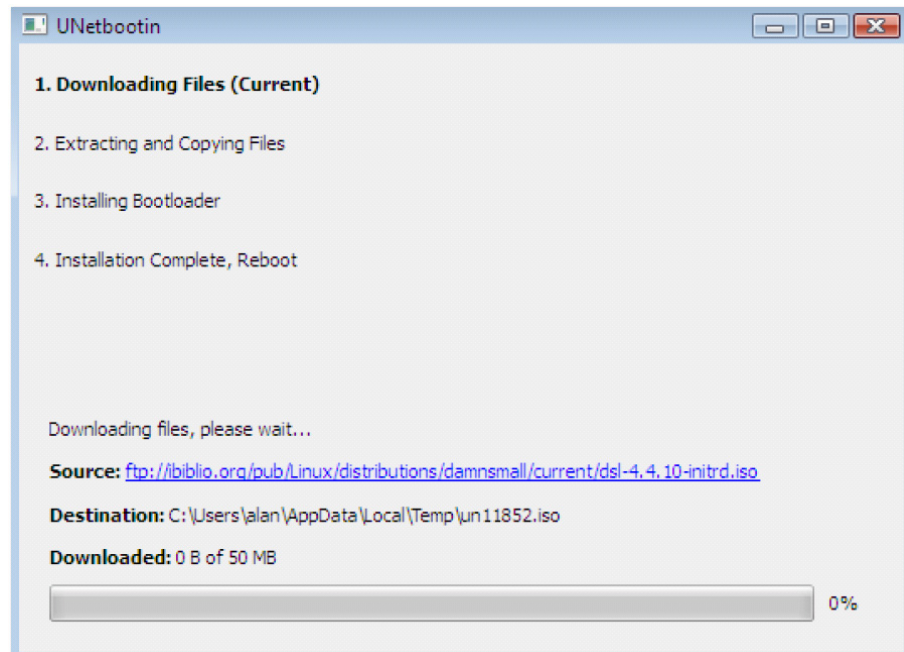
1. 由<http://unetbootin.sourceforge.net>下载UNetbootin。
2. 将 USB 磁盘连接至计算机，磁盘须包含 1GB 或以上容量，格式须为 FAT32。
3. 执行 UNetbootin。
4. 點選“Distribution”，然后选取“Damn Small Linux”。



5. 在类型选项选择“USB Drive”，然后指定磁盘路径。按“OK”。



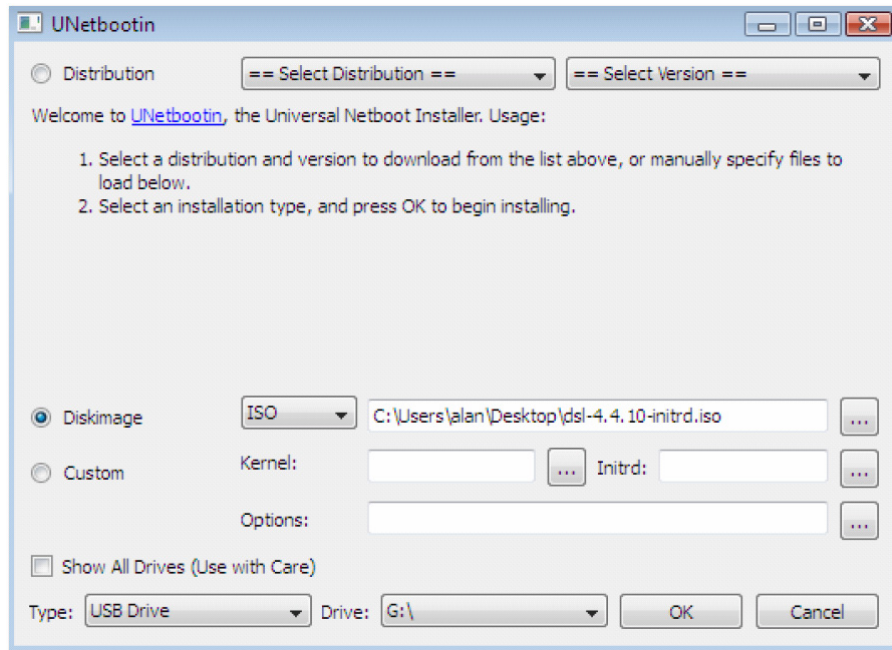
6. 程序会自动将 Damn Small Linux 下载至 USB 磁盘。



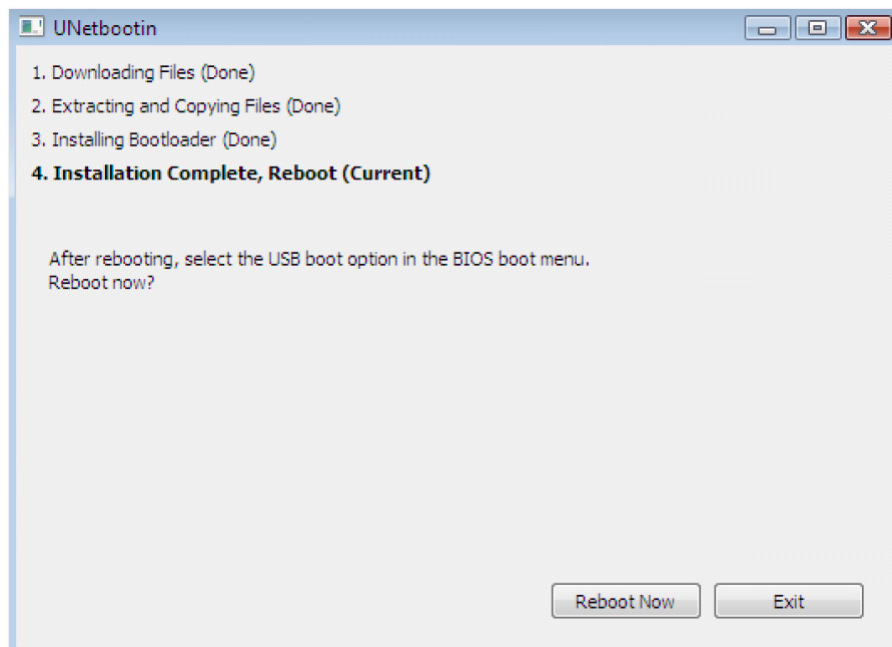
7. 您亦可以透过以下连结手动下载 Damn Small Linux:

<http://distro.ibiblio.org/damnsmall/current/dsl-4.4.10-initrd.iso>

点选“Diskimage”并指定档案位置，然后按“OK”。



8. 完成安装后，按“Exit”。



9. 复制 DOM 映像文件至 USB 磁盘（开机磁盘）。

影像档案:

TS-239 Pro

http://eul.qnap.com/Storage/tsd/fullimage/F_TS-239_20091014-3.1.2.img

TS-239 Pro II

http://eul.qnap.com/Storage/tsd/fullimage/F_TS-239PROII_20100928-1.0.6.img

TS-239 Pro II+

http://eul.qnap.com/Storage/tsd/fullimage/F_TS-239PROII+_20110118-1.0.9.img

TS-259 Pro

http://eul.qnap.com/Storage/tsd/fullimage/F_TS-259_20101129-1.0.9.img

TS-439 Pro

http://eul.qnap.com/Storage/tsd/fullimage/F_TS-439_20091014-3.1.2.img

TS-439 Pro II

http://eul.qnap.com/Storage/tsd/fullimage/F_TS-439PROII_20100928-1.0.6.img

TS-439 Pro II+

http://eul.qnap.com/Storage/tsd/fullimage/F_TS-439PROII+_20101119-1.0.9.img

TS-439U

http://eul.qnap.com/Storage/tsd/fullimage/F_TS-439U_20091014-3.1.2.img

TS-459 Pro, TS-459 Pro+, TS-459 Pro II

http://eul.qnap.com/Storage/tsd/fullimage/F_TS-459_20101118-1.0.9.img

TS-459U, TS-459U+

http://eul.qnap.com/Storage/tsd/fullimage/F_TS-459U_20101118-1.0.9.img

TS-509

[http://eul.qnap.com/Storage/tsd/fullimage/F TS-509 20100302-1.0.1.img](http://eul.qnap.com/Storage/tsd/fullimage/F_TS-509_20100302-1.0.1.img)

TS-559 Pro, TS-559 Pro+, TS-559 Pro II

[http://eul.qnap.com/Storage/tsd/fullimage/F TS-559 20101118-1.0.9.img](http://eul.qnap.com/Storage/tsd/fullimage/F_TS-559_20101118-1.0.9.img)

TS-639 Pro

[http://eul.qnap.com/Storage/tsd/fullimage/F TS-639 20091014-3.1.2.img](http://eul.qnap.com/Storage/tsd/fullimage/F_TS-639_20091014-3.1.2.img)

TS-659 Pro, TS-659 Pro+, TS-659 Pro II

[http://eul.qnap.com/Storage/tsd/fullimage/F TS-659 20101118-1.0.9.img](http://eul.qnap.com/Storage/tsd/fullimage/F_TS-659_20101118-1.0.9.img)

TS-809

[http://eul.qnap.com/Storage/tsd/fullimage/F TS-809 20101119-1.0.9.img](http://eul.qnap.com/Storage/tsd/fullimage/F_TS-809_20101119-1.0.9.img)

TS-809U

[http://eul.qnap.com/Storage/tsd/fullimage/F TS-809U 20101119-1.0.9!\[\]\(35dc653d59570f8f891c312eeece91a2_img.jpg\)](http://eul.qnap.com/Storage/tsd/fullimage/F_TS-809U_20101119-1.0.9.img)

TS-859 Pro, TS-859 Pro+

[http://eul.qnap.com/Storage/tsd/fullimage/F TS-859 20101118-1.0.9.img](http://eul.qnap.com/Storage/tsd/fullimage/F_TS-859_20101118-1.0.9.img)

TS-859U, TS-859U+

[http://eul.qnap.com/Storage/tsd/fullimage/F TS-859U 20101118-1.0.9!\[\]\(b538fe54c1f3a7343e37e85cc2d00497_img.jpg\)](http://eul.qnap.com/Storage/tsd/fullimage/F_TS-859U_20101118-1.0.9.img)

SS-439

[http://eul.qnap.com/Storage/tsd/fullimage/F SS-439 20090627-3.1.0.img](http://eul.qnap.com/Storage/tsd/fullimage/F_SS-439_20090627-3.1.0.img)

SS-839

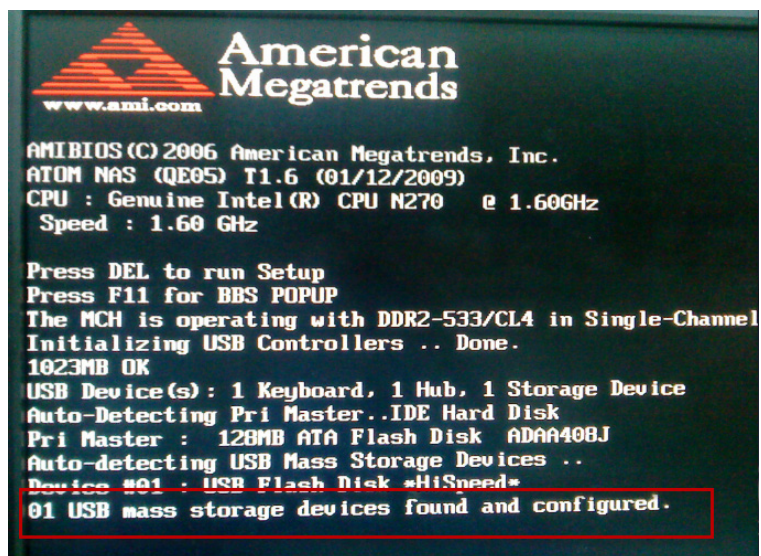
[http://eul.qnap.com/Storage/tsd/fullimage/F SS-839 20091014-3.1.2.img](http://eul.qnap.com/Storage/tsd/fullimage/F_SS-839_20091014-3.1.2.img)

B. 使用 USB 开机磁盘重烧 NAS 的 DOM

1. 请确定 NAS 已关机并移除所有硬盘。
2. 连接一个 VGA 屏幕、一个 USB 键盘及 USB 开机磁盘至 NAS。



3. 启动 NAS 并连续按 F11 键。

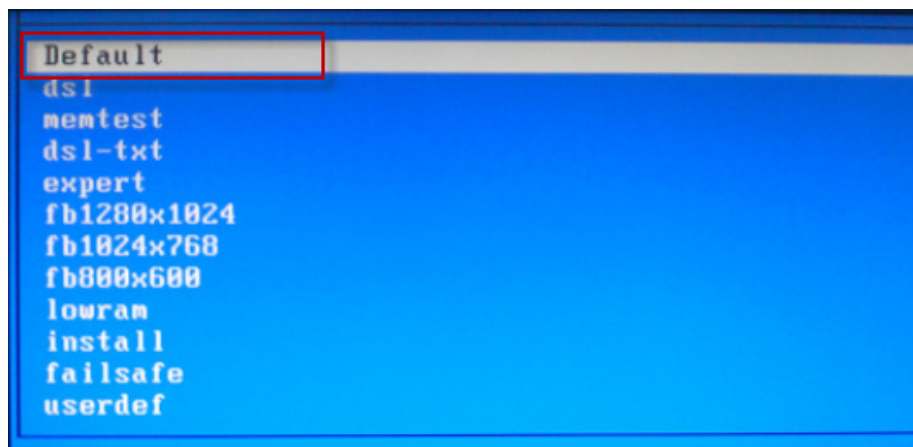


4. 选择 USB 磁盘作为开机装置 (boot device)，如屏幕没有显示选单，请重新启动 NAS 并重复上一个步骤。

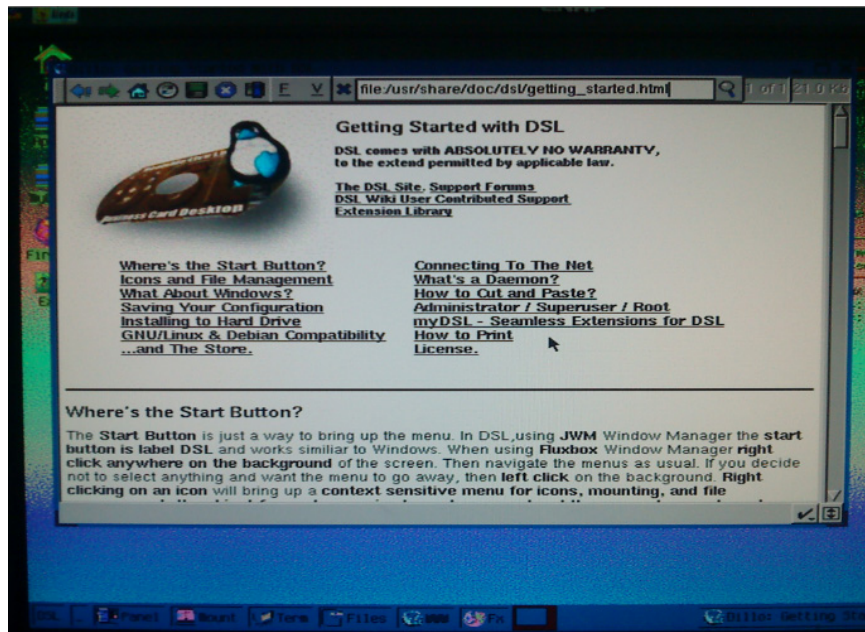
注意：如侦测到两个 USB 装置，请勿选择 “USB DISK MODULE PMAP”。



5. 在下一个目录选择 “Default” 进入屏幕设定。按<SPACE>键继续。



6. 成功开机后，将会显示以下窗口。



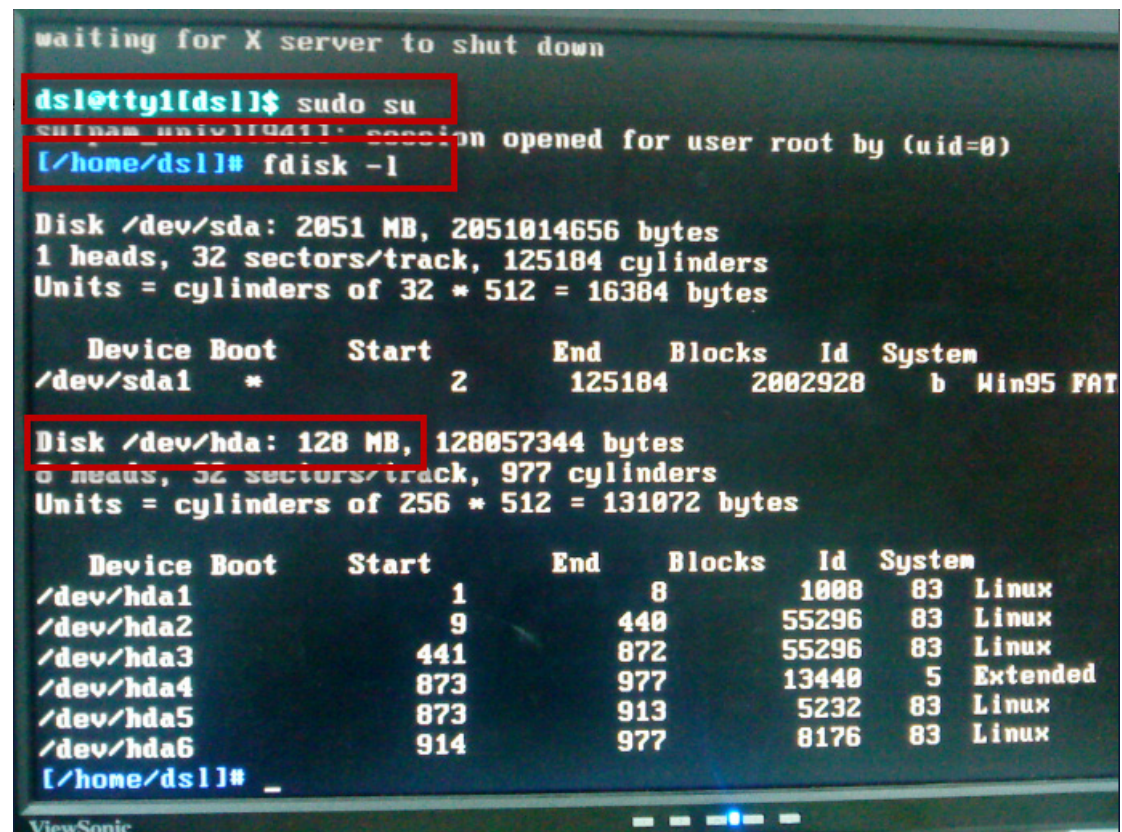
7. 按 Ctrl+Alt+Del 以输入指令。

8. 输入以下指令：

```
# sudo su  
# fdisk -l
```

/dev/sda 代表您的 USB 磁盘。

/dev/sdb 或 /dev/hda 代表 DOM 磁盘，大小为 128 MB 或 512 MB，视 NAS 型号而定。



The screenshot shows a terminal window with the following content:

```
waiting for X server to shut down  
dsl@tty1(dsl)$ sudo su  
suinnam_uh10110411: session opened for user root by (uid=0)  
[/home/dsl]$ fdisk -l  
  
Disk /dev/sda: 2051 MB, 2051014656 bytes  
1 heads, 32 sectors/track, 125184 cylinders  
Units = cylinders of 32 * 512 = 16384 bytes  
  
   Device Boot      Start         End      Blocks   Id  System  
/dev/sda1  *           2         125184       2002928    b   Win95 FAT  
  
Disk /dev/hda: 128 MB, 128057344 bytes  
0 heads, 32 sectors/track, 977 cylinders  
Units = cylinders of 256 * 512 = 131072 bytes  
  
   Device Boot      Start         End      Blocks   Id  System  
/dev/hda1             1             8         1008    83   Linux  
/dev/hda2             9          440        55296    83   Linux  
/dev/hda3          441          872        55296    83   Linux  
/dev/hda4          873          977        13440     5   Extended  
/dev/hda5          873          913         5232    83   Linux  
/dev/hda6          914          977         8176    83   Linux  
[/home/dsl]$ _
```

9. 输入以下指令：

```
# mkdir usbdrive  
# mount /dev/sda1 /home/dsl/usbdrive  
# cd /home/dsl/usbdrive
```

10. 输入以下指令：

```
# cp dom.img /dev/sdb
```

“/dev/sdb” 或 “/dev/hda” 代表 DOM 磁盘，视 NAS 型号而定。

“dom.img” 为韧体名称。

11. 输入以下指令重新启动 NAS:

reboot

```
[/home/dsl]# fdisk -l

Disk /dev/sda: 2051 MB, 2051014656 bytes
1 heads, 32 sectors/track, 125184 cylinders
Units = cylinders of 32 * 512 = 16384 bytes

   Device Boot      Start         End      Blocks   Id  System
/dev/sda1  *           2         125184     2002928    b   Win95 F

Disk /dev/hda: 128 MB, 128057344 bytes
8 heads, 32 sectors/track, 977 cylinders
Units = cylinders of 256 * 512 = 131072 bytes

   Device Boot      Start         End      Blocks   Id  System
/dev/hda1             1           8         1008    83   Linux
/dev/hda2             9          440       55296    83   Linux
/dev/hda3            441          872       55296    83   Linux
/dev/hda4            873          977       13440     5   Extended
/dev/hda5            873          913        5232    83   Linux
/dev/hda6            914          977        8176    83   Linux

[/home/dsl]# mkdir usbdrive
[/home/dsl]# mount /dev/sda1 /home/dsl/usbdrive
[/home/dsl]# cd /home/dsl/usbdrive
[/home/dsl/usbdrive]# cp dom.img /dev/hda
[/home/dsl/usbdrive]# reboot
```

12. 将 NAS 连接至 switch 或 router，然后使用 QNAP Finder 寻找 NAS。如 NAS 可被找到，您可以关机，安装硬盘，然后重新启动并设定系统。

如问题持续，该如何处理？

如系统启动问题仍无法解决，请尽快联络经销商或代理商安排维修服务。

9. Intel x86 系统NAS型号之韧体回复说明

适用 QNAP NAS 型号：TS-239、TS-439、TS-239 Pro II、TS-439 Pro II、SS-439、SS-839、TS-509、TS-809/809U、TS-x59 及 TS-x59 Pro+系统。

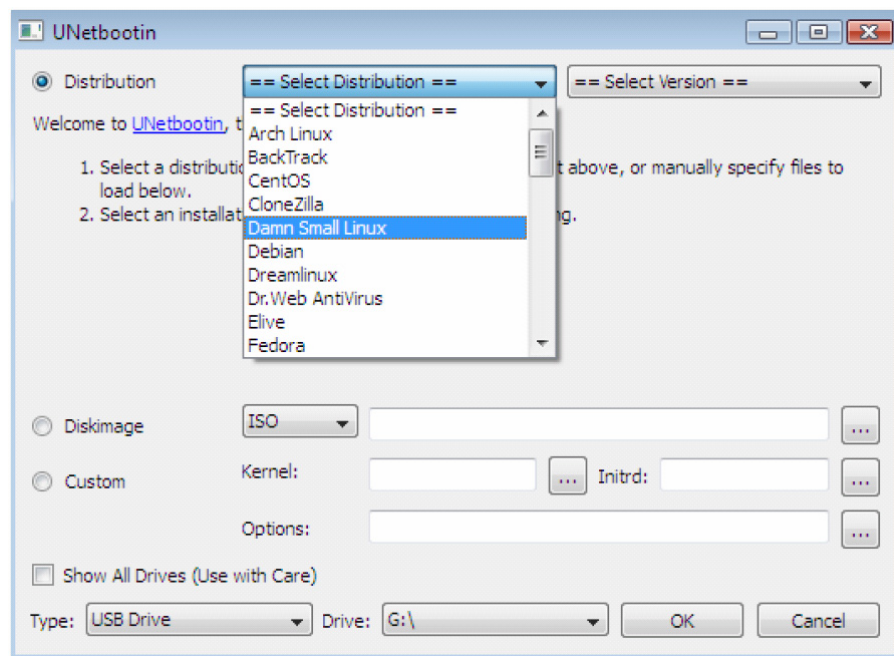
如使用者在更新系统韧体时因停电或网络联机中断导致韧体更新失败，可参考此说明回复系统韧体。要确定本说明适用于您的 NAS，请先照以下步骤检查系统状态。

1. 将 NAS 关机。
2. 移除系统内所有硬盘。
3. 启动 NAS。
4. 等候约十秒，您会听到一声短哔声。
5. 短哔声后两分钟，系统会再发出一声长哔声。
6. 如您只听到短哔声，或没有听到任何哔声，请依照此说明回复 NAS。

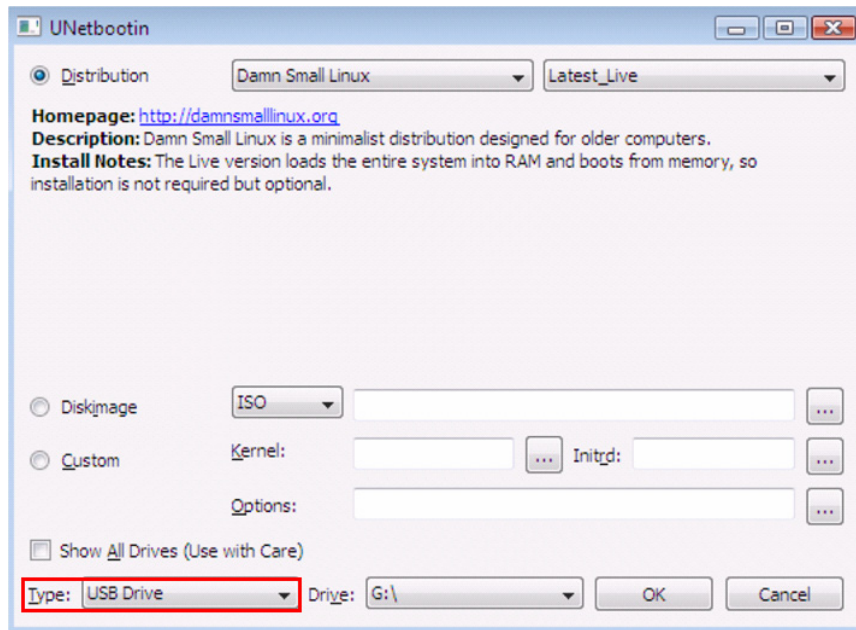
请依照以下步骤回复 NAS:

建立可开机的 USB 磁盘

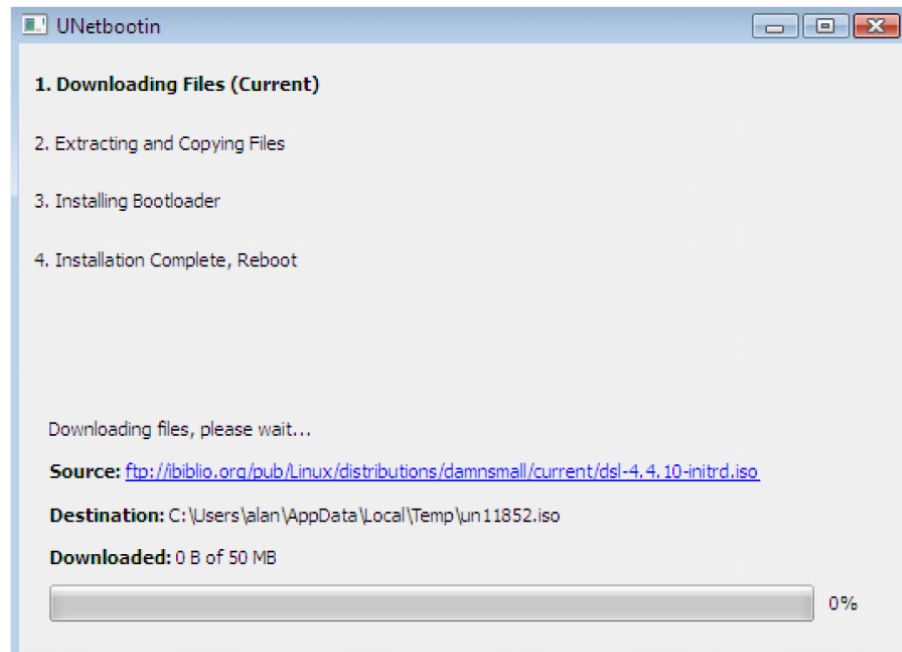
1. 由<http://unetbootin.sourceforge.net>下载UNetbootin。
2. 将 USB 磁盘连接至计算机，磁盘须包含 1GB 或以上容量，格式须为 FAT32。
3. 执行 UNetbootin。
4. 點選“Distribution”，然后选取“Damn Small Linux”。



5. 在类型选项选择“USB Drive”，然后指定磁盘路径。



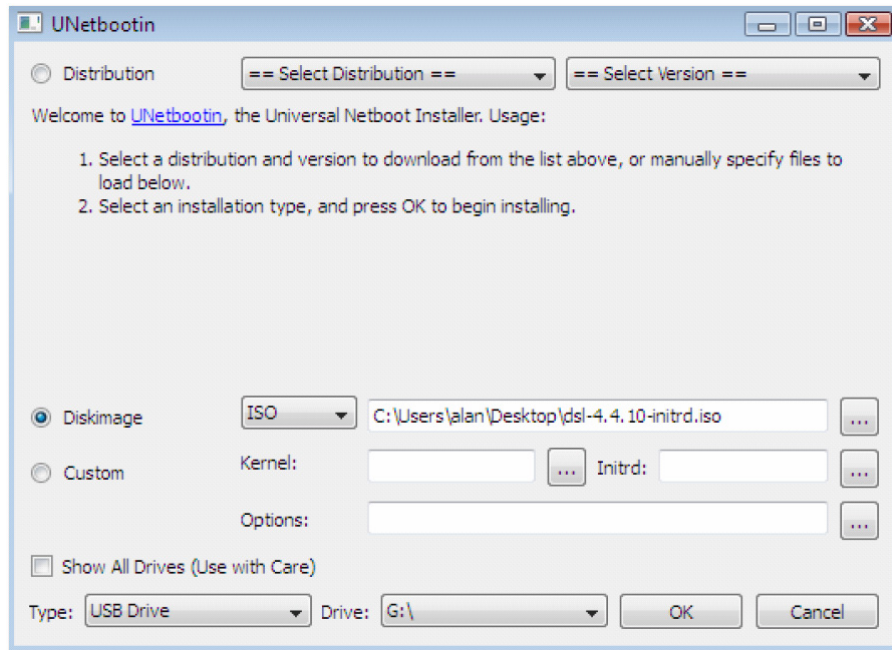
6. 程序会自动将 Damn Small Linux 下载至 USB 磁盘。



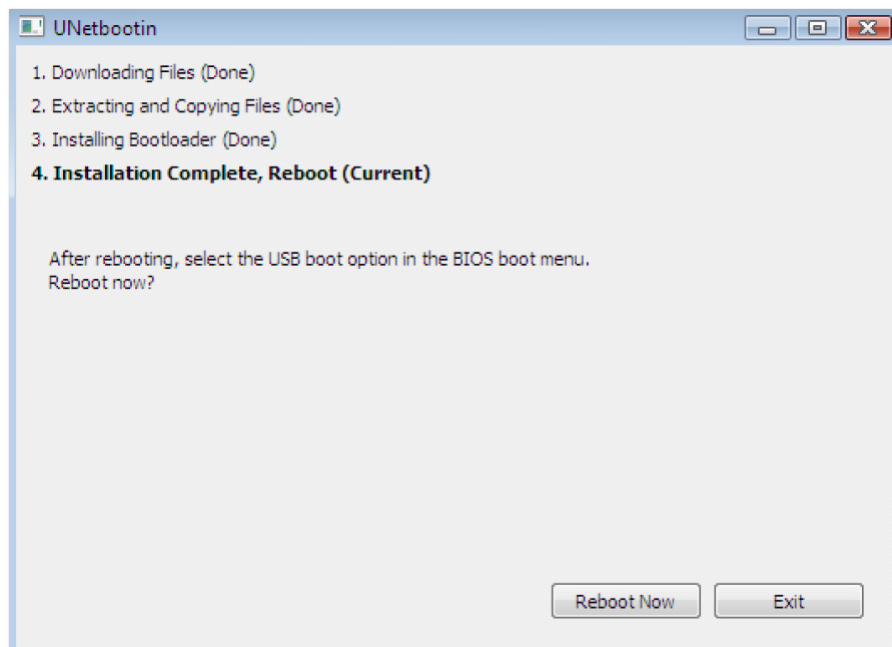
7. 您亦可以透过以下连结手动下载 Damn Small Linux:

<http://distro.ibiblio.org/damnsmall/current/dsl-4.4.10-initrd.iso>

点选“Diskimage”并指定档案位置，然后按“OK”。



8. 完成安装后，按“Exit”。

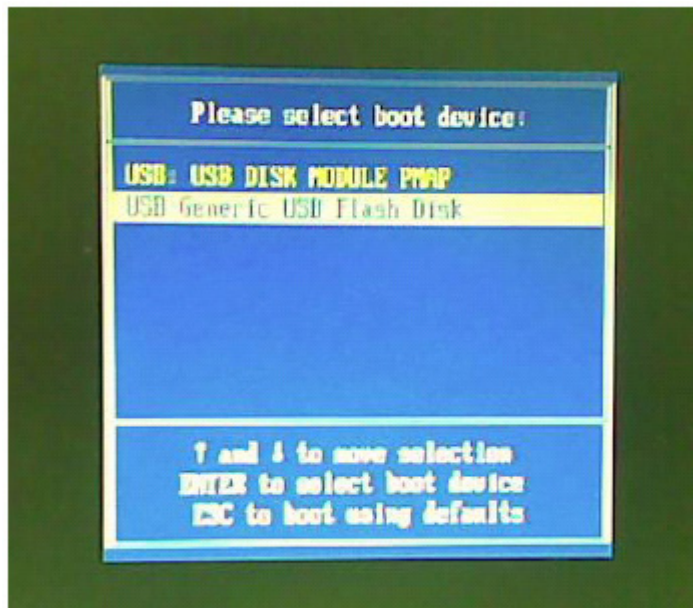


9. 复制 DOM 映像文件至 USB 磁盘（开机磁盘）。

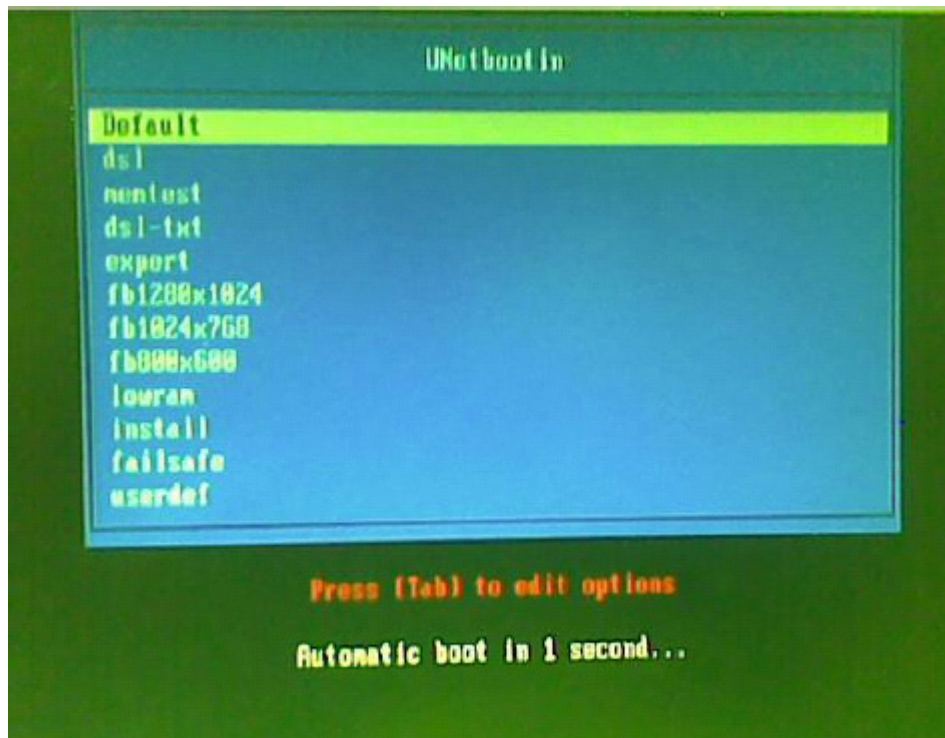
使用 USB 开机磁盘重烧 NAS 的 DOM

1. 请确定 NAS 已关机并移除所有硬盘。
2. 连接一个 VGA 屏幕、一个 USB 键盘及 USB 开机磁盘至 NAS。
3. 启动 NAS 并连续按 F11 键。
4. 选择 USB 磁盘作为开机装置 (boot device)，如屏幕没有显示选单，请重新启动 NAS 并重复上一个步骤。

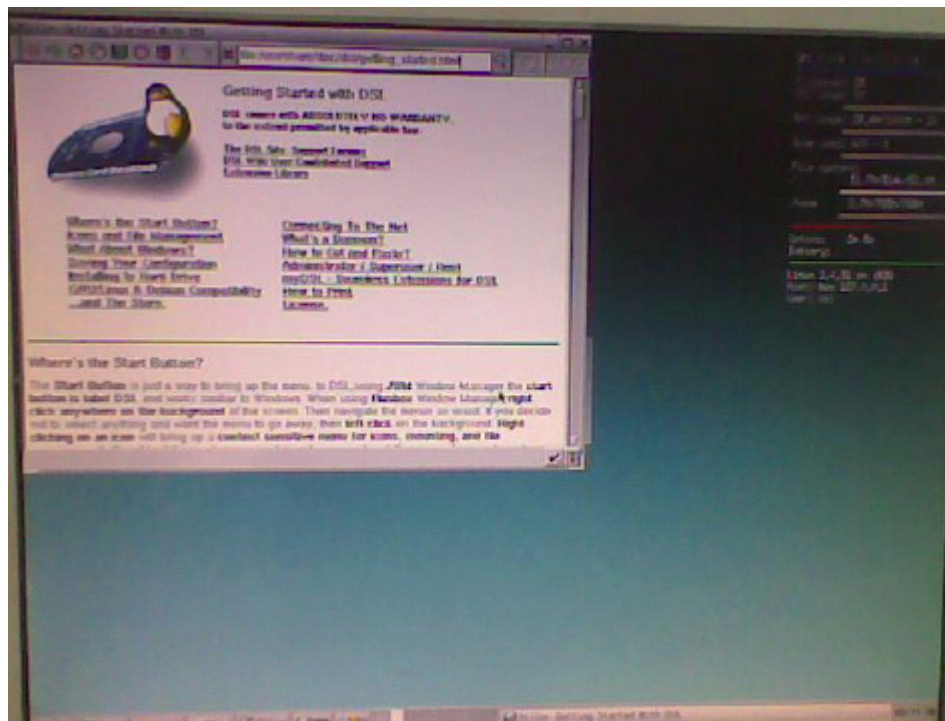
注意：如侦测到两个 USB 装置，请勿选择“USB DISK MODULE PMAP”。



5. 在下一个目录选择“Default”。



6. 成功开机后，将会显示以下窗口。

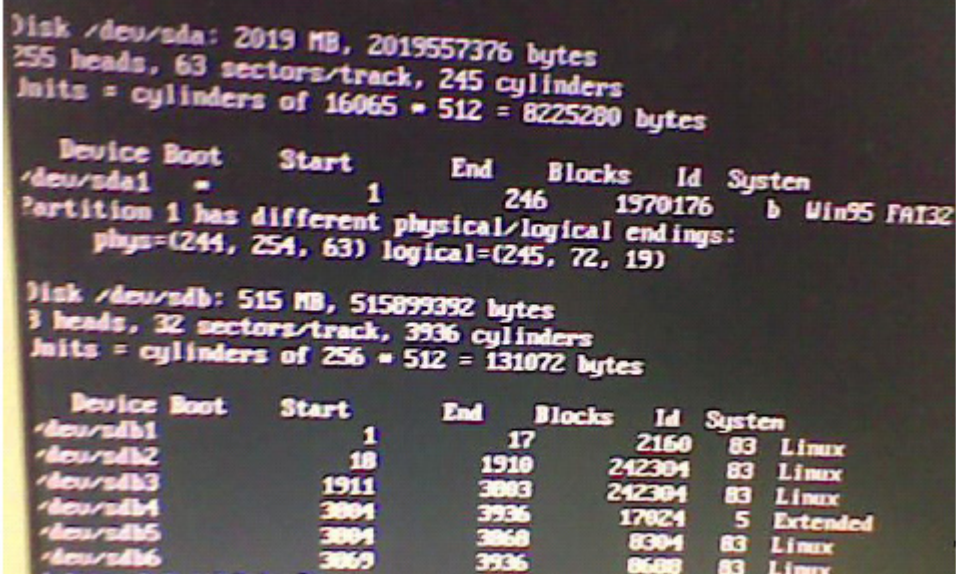


7. 按 Ctrl+Alt+Del 以输入指令。

8. 输入以下指令：

```
# sudo su
# fdisk -l
```

9. 以下结果将会显示。



```
Disk /dev/sda: 2019 MB, 2019557376 bytes
255 heads, 63 sectors/track, 245 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes

   Device Boot      Start         End      Blocks   Id  System
/dev/sda1            1           246     1970176    b  Win95 FAT32
Partition 1 has different physical/logical endings:
   phys=(244, 254, 63) logical=(245, 72, 19)

Disk /dev/sdb: 515 MB, 515893392 bytes
3 heads, 32 sectors/track, 3936 cylinders
Units = cylinders of 256 * 512 = 131072 bytes

   Device Boot      Start         End      Blocks   Id  System
/dev/sdb1            1           17        2160    83  Linux
/dev/sdb2           18          1910     242304    83  Linux
/dev/sdb3          1911          3003     242304    83  Linux
/dev/sdb4          3004          3936     17024     5  Extended
/dev/sdb5          3004          3060        8304    83  Linux
/dev/sdb6          3061          3936        8608    83  Linux
```

/dev/sda 代表您的 USB 磁盘； /dev/sdb (128MB 或 512MB)代表要重烧的 DOM 大小。

10. 输入以下指令：

```
# mkdir usbdrive
# mount /dev/sda1 /home/dsl/usbdrive
# cd /home/dsl/usbdrive
```

11. 输入以下指令：

```
# cp dom.img /dev/sdb
“dom.img” 为韧体名称， /dev/sdb 为 DOM 的磁盘名称。
```

12. 输入以下指令重新启动 NAS：

```
# reboot
```

13. 将 NAS 连接至 switch 或 router，然后使用 QNAP Finder 寻找 NAS。如 NAS 可被找到，您可以关机，安装硬盘，然后重新启动并设定系统。

如问题持续，该如何处理？

如系统启动问题仍无法解决，请尽快联络经销商或代理商安排维修服务。

技术支持

威联通提供在线支持及实时通客户服务，联络方式如下：

在线支持： <http://www.qnap.com>

MSN: q.support@hotmail.com

Skype: qnapskype

论坛： <http://forum.qnap.com>

美国及加拿大地区技术支持

Email: q_supportus@qnap.com

电话： 909-595-2819

地址： 166 University Parkway, Pomona CA 9176

服务时间： 08:00 - 17:00 (GMT- 08:00 Pacific Time, 星期一至星期五)

GNU GENERAL PUBLIC LICENSE

Version 3, 29 June 2007

Copyright © 2007 Free Software Foundation, Inc. <<http://fsf.org/>>

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

Preamble

The GNU General Public License is a free, copyleft license for software and other kinds of works.

The licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program--to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright

on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

“This License” refers to version 3 of the GNU General Public License.

“Copyright” also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

“The Program” refers to any copyrightable work licensed under this License. Each licensee is addressed as “you”. “Licensees” and “recipients” may be individuals or organizations.

To “modify” a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting

work is called a “modified version” of the earlier work or a work “based on” the earlier work.

A “covered work” means either the unmodified Program or a work based on the Program.

To “propagate” a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To “convey” a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays “Appropriate Legal Notices” to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The “source code” for a work means the preferred form of the work for making modifications to it. “Object code” means any non-source form of a work.

A “Standard Interface” means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The “System Libraries” of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A “Major Component”, in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler

used to produce the work, or an object code interpreter used to run it.

The “Corresponding Source” for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work’s System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice; keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

- a) The work must carry prominent notices stating that you modified it, and giving a relevant date.
- b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep intact all notices".
- c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other

way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an “aggregate” if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation’s users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you

maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A “User Product” is either (1) a “consumer product”, which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, “normally used” refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

“Installation Information” for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).

The requirement to provide Installation Information does not include a requirement to

continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

7. Additional Terms.

“Additional permissions” are terms that supplement the terms of this License by making exceptions from one or more of its conditions. Additional permissions that are applicable to the entire Program shall be treated as though they were included in this License, to the extent that they are valid under applicable law. If additional permissions apply only to part of the Program, that part may be used separately under those permissions, but the entire Program remains governed by this License without regard to the additional permissions.

When you convey a copy of a covered work, you may at your option remove any additional permissions from that copy, or from any part of it. (Additional permissions may be written to require their own removal in certain cases when you modify the work.) You may place additional permissions on material, added by you to a covered work, for which you have or can give appropriate copyright permission.

Notwithstanding any other provision of this License, for material you add to a covered work, you may (if authorized by the copyright holders of that material) supplement the terms of this License with terms:

- a) Disclaiming warranty or limiting liability differently from the terms of sections 15 and 16 of this License; or
- b) Requiring preservation of specified reasonable legal notices or author attributions in that material or in the Appropriate Legal Notices displayed by works containing it; or
- c) Prohibiting misrepresentation of the origin of that material, or requiring that modified versions of such material be marked in reasonable ways as different from the original version; or

- d) Limiting the use for publicity purposes of names of licensors or authors of the material; or
- e) Declining to grant rights under trademark law for use of some trade names, trademarks, or service marks; or
- f) Requiring indemnification of licensors and authors of that material by anyone who conveys the material (or modified versions of it) with contractual assumptions of liability to the recipient, for any liability that these contractual assumptions directly impose on those licensors and authors.

All other non-permissive additional terms are considered “further restrictions” within the meaning of section 10. If the Program as you received it, or any part of it, contains a notice stating that it is governed by this License along with a term that is a further restriction, you may remove that term. If a license document contains a further restriction but permits relicensing or conveying under this License, you may add to a covered work material governed by the terms of that license document, provided that the further restriction does not survive such relicensing or conveying.

If you add terms to a covered work in accord with this section, you must place, in the relevant source files, a statement of the additional terms that apply to those files, or a notice indicating where to find the applicable terms.

Additional terms, permissive or non-permissive, may be stated in the form of a separately written license, or stated as exceptions; the above requirements apply either way.

8. Termination.

You may not propagate or modify a covered work except as expressly provided under this License. Any attempt otherwise to propagate or modify it is void, and will automatically terminate your rights under this License (including any patent licenses granted under the third paragraph of section 11).

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from

that copyright holder, and you cure the violation prior to 30 days after your receipt of the notice.

Termination of your rights under this section does not terminate the licenses of parties who have received copies or rights from you under this License. If your rights have been terminated and not permanently reinstated, you do not qualify to receive new licenses for the same material under section 10.

9. Acceptance Not Required for Having Copies.

You are not required to accept this License in order to receive or run a copy of the Program. Ancillary propagation of a covered work occurring solely as a consequence of using peer-to-peer transmission to receive a copy likewise does not require acceptance. However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

10. Automatic Licensing of Downstream Recipients.

Each time you convey a covered work, the recipient automatically receives a license from the original licensors, to run, modify and propagate that work, subject to this License. You are not responsible for enforcing compliance by third parties with this License.

An “entity transaction” is a transaction transferring control of an organization, or substantially all assets of one, or subdividing an organization, or merging organizations. If propagation of a covered work results from an entity transaction, each party to that transaction who receives a copy of the work also receives whatever licenses to the work the party’s predecessor in interest had or could give under the previous paragraph, plus a right to possession of the Corresponding Source of the work from the predecessor in interest, if the predecessor has it or can get it with reasonable efforts.

You may not impose any further restrictions on the exercise of the rights granted or affirmed under this License. For example, you may not impose a license fee, royalty, or other charge for exercise of rights granted under this License, and you may not initiate litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the Program or any portion of it.

11. Patents.

A “contributor” is a copyright holder who authorizes use under this License of the Program or a work on which the Program is based. The work thus licensed is called the contributor’s “contributor version”.

A contributor’s “essential patent claims” are all patent claims owned or controlled by the contributor, whether already acquired or hereafter acquired, that would be infringed by some manner, permitted by this License, of making, using, or selling its contributor version, but do not include claims that would be infringed only as a consequence of further modification of the contributor version. For purposes of this definition, “control” includes the right to grant patent sublicenses in a manner consistent with the requirements of this License.

Each contributor grants you a non-exclusive, worldwide, royalty-free patent license under the contributor’s essential patent claims, to make, use, sell, offer for sale, import and otherwise run, modify and propagate the contents of its contributor version.

In the following three paragraphs, a “patent license” is any express agreement or commitment, however denominated, not to enforce a patent (such as an express permission to practice a patent or covenant not to sue for patent infringement). To “grant” such a patent license to a party means to make such an agreement or commitment not to enforce a patent against the party.

If you convey a covered work, knowingly relying on a patent license, and the Corresponding Source of the work is not available for anyone to copy, free of charge and under the terms of this License, through a publicly available network server or other readily accessible means, then you must either (1) cause the Corresponding Source to be so available, or (2) arrange to deprive yourself of the benefit of the patent license for this particular work, or (3) arrange, in a manner consistent with the requirements of this License, to extend the patent license to downstream recipients. “Knowingly relying” means you have actual knowledge that, but for the patent license, your conveying the covered work in a country, or your recipient’s use of the covered work in a country, would infringe one or more identifiable patents in that country that you have reason to believe are valid.

If, pursuant to or in connection with a single transaction or arrangement, you convey, or propagate by procuring conveyance of, a covered work, and grant a patent license to some of the parties receiving the covered work authorizing them to use, propagate, modify or convey a specific copy of the covered work, then the patent license you grant is

automatically extended to all recipients of the covered work and works based on it.

A patent license is “discriminatory” if it does not include within the scope of its coverage, prohibits the exercise of, or is conditioned on the non-exercise of one or more of the rights that are specifically granted under this License. You may not convey a covered work if you are a party to an arrangement with a third party that is in the business of distributing software, under which you make payment to the third party based on the extent of your activity of conveying the work, and under which the third party grants, to any of the parties who would receive the covered work from you, a discriminatory patent license (a) in connection with copies of the covered work conveyed by you (or copies made from those copies), or (b) primarily for and in connection with specific products or compilations that contain the covered work, unless you entered into that arrangement, or that patent license was granted, prior to 28 March 2007.

Nothing in this License shall be construed as excluding or limiting any implied license or other defenses to infringement that may otherwise be available to you under applicable patent law.

12. No Surrender of Others’ Freedom.

If conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot convey a covered work so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not convey it at all. For example, if you agree to terms that obligate you to collect a royalty for further conveying from those to whom you convey the Program, the only way you could satisfy both those terms and this License would be to refrain entirely from conveying the Program.

13. Use with the GNU Affero General Public License.

Notwithstanding any other provision of this License, you have permission to link or combine any covered work with a work licensed under version 3 of the GNU Affero General Public License into a single combined work, and to convey the resulting work. The terms of this License will continue to apply to the part which is the covered work, but the special requirements of the GNU Affero General Public License, section 13, concerning interaction through a network will apply to the combination as such.

14. Revised Versions of this License.

The Free Software Foundation may publish revised and/or new versions of the GNU General

Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies that a certain numbered version of the GNU General Public License “or any later version” applies to it, you have the option of following the terms and conditions either of that numbered version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of the GNU General Public License, you may choose any version ever published by the Free Software Foundation.

If the Program specifies that a proxy can decide which future versions of the GNU General Public License can be used, that proxy’s public statement of acceptance of a version permanently authorizes you to choose that version for the Program.

Later license versions may give you additional or different permissions. However, no additional obligations are imposed on any author or copyright holder as a result of your choosing to follow a later version.

15. Disclaimer of Warranty.

THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM “AS IS” WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. Limitation of Liability.

IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MODIFIES AND/OR CONVEYS THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

17. Interpretation of Sections 15 and 16.

If the disclaimer of warranty and limitation of liability provided above cannot be given

local legal effect according to their terms, reviewing courts shall apply local law that most closely approximates an absolute waiver of all civil liability in connection with the Program, unless a warranty or assumption of liability accompanies a copy of the Program in return for a fee.

END OF TERMS AND CONDITIONS