

ABB i-bus[®] KNX Router IP IPR/S 3.1.1 Manual del producto

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ABB i-bus[®] KNX General

1 General

El router IP IPR/S 3.1.1 ABB i-bus[®] conecta el bus KNX con una red Ethernet. Por medio de la red se pueden enviar telegramas KNX a otros dispositivos y se pueden recibir en este dispositivo.

1.1 Uso del manual del producto

En el presente manual se proporciona información técnica detallada sobre el funcionamiento, el montaje y la programación del dispositivo KNX ABB i-bus[®]. El uso se explica por medio de ejemplos.

El manual del producto se divide en los siguientes capítulos:

Capítulo 1	General
Capítulo 2	Tecnología del aparato
Capítulo 3	Puesta en marcha
Capítulo 4	Planificación y uso
Capítulo A	Anexo

1.1.1

Notas


En este manual, las notas y las indicaciones de seguridad se representan como sigue:


Nota
Indicaciones y consejos para facilitar el manejo

Ejemplos
Ejemplos de uso, de montaje y de programación

Importante
Esta indicación de seguridad se utiliza cuando se corre peligro de que se produzca un fallo de funcionamiento pero no hay riesgo de daños ni lesiones.

Atención
Esta indicación de seguridad se utiliza cuando se corre peligro de que se produzca un fallo de funcionamiento pero no hay riesgo de daños ni lesiones.

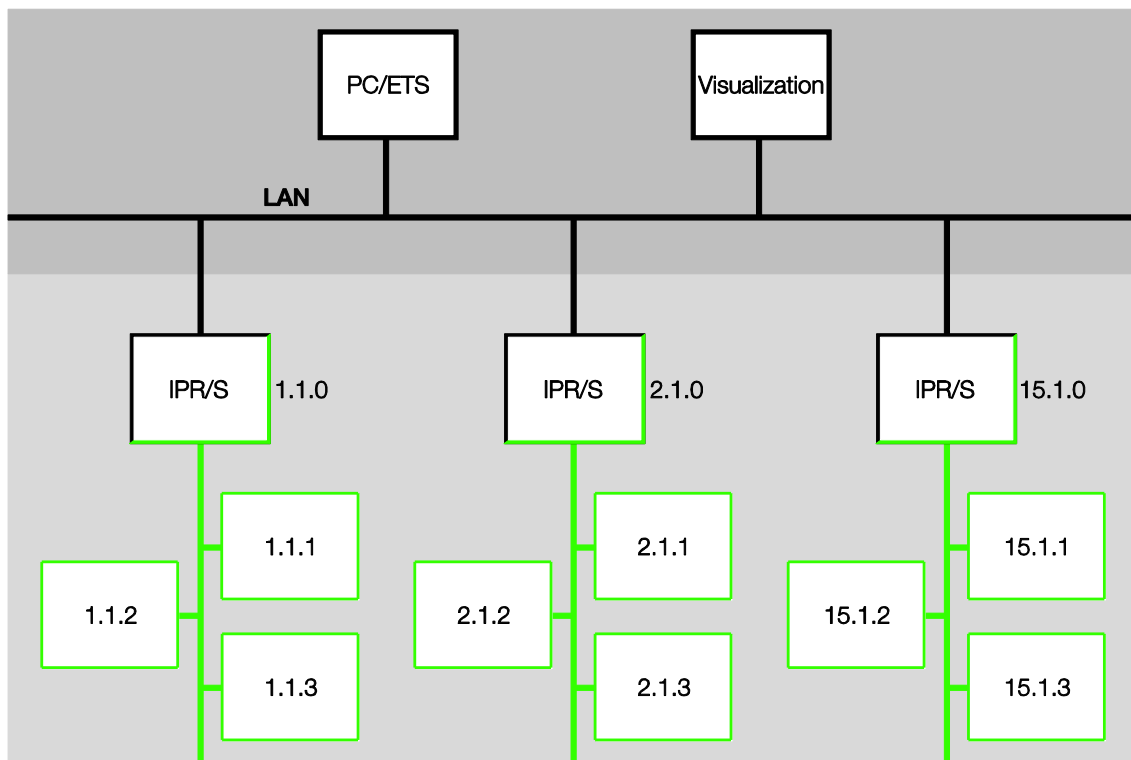
 Peligro
Esta indicación de seguridad se utiliza cuando se corre peligro de muerte o de sufrir lesiones debido a una manipulación incorrecta.

 Peligro
Esta indicación de seguridad se utiliza cuando se corre peligro inminente de muerte debido a una manipulación incorrecta.

1.2 Vista general del producto y sus funciones

El router IP IPR/S 3.1.1 ABB i-bus® conecta el bus KNX con una red Ethernet. Por medio de la red se pueden enviar telegramas KNX a otros dispositivos y se pueden recibir en este dispositivo.

Para la comunicación, este dispositivo utiliza el protocolo KNXnet/IP de la Asociación KNX (enrutamiento y tunelización).



El router dispone de 5 servidores de túnel, véase capítulo [Uso de los servidores de túnel integrados](#), pág. 38. Estos son compatibles tanto con el servicio de monitor de bus como el servicio de monitor de grupos (alternativamente).

Como alternativa a la comunicación estándar KNX (Multicast), hasta 10 routers IP IPR/S 3.1.1 de ABB pueden comunicarse entre sí también a través del protocolo Unicast, véase capítulo [Telegramas KNX en la red](#), pág. 42.

La alimentación de tensión puede llevarse a cabo a través de PoE (Power over Ethernet) según IEEE 802.3af clase 1 o por medio de tensión auxiliar.

Para el router IP está disponible la ABB i-bus® Tool. Con ella pueden encontrarse los routers en la red (IP Discovery), pueden realizarse los ajustes para la comunicación Unicast y, en caso necesario, puede actualizarse el firmware, véase capítulo [La i-bus® Tool](#), pág. 47.

El dispositivo es compatible con la función estándar KNX "Supervisión de los cortes de tensión de bus". Se trata de una función de gestión de la red utilizada, por ejemplo, por las visualizaciones (véase cap. [Supervisión de los cortes de tensión de bus](#), pág. 6).

El router IP es compatible con la tabla de filtros completa para todos los grupos principales, es decir, pueden proyectarse los grupos principales 0...31 (y con una vista sin restricciones de direcciones de grupo, las direcciones de grupo 1...65 535). El ETS es compatible con esta función a partir de la versión 4.1.7.

1.2.1 Supervisión de los cortes de tensión de bus

El router IP supervisa los posibles cortes de tensión del bus TP KNX. En caso de cambio de estado de la tensión de bus, se envía a la red IP un comando de difusión del tipo "NetworkParameterWrite".

Se envían los siguientes valores:

- Corte de tensión de bus: "00063301" (hex)
- Retorno de tensión de bus: "00063300" (hex)

Estos telegramas pueden, por ejemplo, ser analizados por una visualización.

Tipo	DPT	Información
NetworkParameterWrite		00 06 33 01
NetworkParameterWrite		00 06 33 00

1.2.2 Vista general de versiones

La siguiente tabla proporciona una visión general de las funciones posibles con el IPR/S 2.1 y el IPR/S 3.1.1 y con los programas de la aplicación *Router IP/1.0* (ETS 3 y ETS 4), *Router IP/1.1* (ETS 3) y *Router IP/2.0* (ETS 4).

Aparato	IPR/S 2.1	IPR/S 3.1.1	IPR/S 3.1.1
Aplicación	Router IP/1.0	Router IP/1.1	Router IP/2.0
ETS	ETS 3/ETS 4	ETS 3	ETS 4/ETS 5
Características del Router IP			
Número de servidores de túnel	1	1	5
Número de conexiones Unicast	3	10	10
Supervisión de los cortes de tensión de bus (véase cap. Supervisión de los cortes de tensión de bus , pág. 6)	-	■	■
Filtrado telegramas de grupo, grupos principales 0...13	■	■	■
Filtrado telegramas de grupo, grupos principales 14...31	-	-	■ (Desde ETS 4.1.7)
IP-Discovery (i-bus® Tool)	■	■	■
Actualización de firmware (i-bus® Tool)	-	■	■
Parametrización Unicast (i-bus® Tool)	-	■	■
Power over Ethernet	-	■	■

■ = Característica incluida
- = Característica no incluida

Nota

La aplicación *Router IP/2.0* es compatible con el ETS 4 a partir de la versión 4.1.7 y con el ETS 5 a partir de la versión 5.0.4.

Nota

Encontrará una descripción de las funciones en la ayuda online de la i-bus® Tool.

ABB i-bus® KNX Tecnología del aparato

2 Tecnología del aparato



El router IP 3.1.1 conforma la interfaz entre las instalaciones KNX y las redes IP. Puede utilizarse como acoplador de líneas o de zona y para ello utiliza la red local (LAN) para intercambiar telegramas entre las líneas/zonas.

Con el ETS se pueden programar dispositivos KNX a través de la LAN (hay disponibles 5 servidores de túnel). El dispositivo utiliza el protocolo KNXnet/IP de la Asociación KNX (enrutamiento y tunelización). Alternativamente, el dispositivo se puede comunicar a través de Unicast. La alimentación de corriente tiene lugar con entre 12 y 30 V CC o PoE (Power over Ethernet).

2.1 Datos técnicos

Alimentación	Tensión auxiliar U_s	12...30 V CC (+10 % / -15 %) o PoE (IEEE 802.3af clase 1)
	Potencia disipada	Máximo 1,8 W
	Consumo de corriente tensión auxiliar	Máximo 120 mA con 12 V
	Tensión nominal U_n	12 V CC
	Consumo de corriente KNX	< 10 mA
Conexiones	KNX	Borne de conexión de bus
	Borne enchufable para tensión de servicio	Borne enchufable
	LAN	Conector hembra RJ45 para 10/100BaseT, redes IEEE 802.3, AutoSensing
Elementos de mando y visualización	LED rojo y tecla	Para asignar la dirección física
	LED verde "On"	Indicación de disposición de servicio
	LED amarillo "LAN/Link"	Indicación de conexión de red
	LED amarillo "Telegrama"	Indicación de tráfico de telegramas KNX
Tipo de protección	IP 20	Según DIN EN 60 529
Clase de protección	II	Según DIN EN 61 140
Categoría de aislamiento	Categoría de sobretensión	III según DIN EN 60 664-1
	Grado de contaminación	2 según DIN EN 60 664-1
Tensión baja de seguridad KNX	SELV 30 V CC	
Rango de temperaturas	Servicio	-5 °C...+45 °C
	Almacenamiento	-25 °C...+55 °C
	Transporte	-25 °C...+70 °C
Condiciones ambientales	Humedad máxima del aire	95%, no admite rocío
	Presión del aire	Atmósfera hasta 2 000 m

ABB i-bus® KNX

Tecnología del aparato

Diseño	Aparato para montaje en raíl DIN (MDRC)	Aparato de instalación modular, ProM
	Dimensiones	90 x 36 x 64 mm (H x A x P)
	Anchura de montaje	2 módulos de 18 mm cada uno
	Profundidad de montaje	68 mm
Montaje	En raíl de montaje DIN 35 mm	Según DIN EN 60 715
Posición de montaje	A voluntad	
Peso	0,1 kg	
Carcasa, colores	Plástico, sin halógenos, gris	
Aprobación	KNX según EN 50 090-1, -2	
Marcado CE	En conformidad con la Directiva CEM y la Directiva de Baja Tensión	

Tipo de aparato	Aplicación	Número máximo de objetos de comunicación	Número máximo de direcciones de grupo	Número máximo de asignaciones
IPR/S 3.1.1	Router IP/...*	0	0	0

* ... = número de versión actual de la aplicación. **Consulte la información sobre el software que aparece en nuestra página web.**

Nota

Para la programación se necesitan el ETS y la aplicación actual del dispositivo.

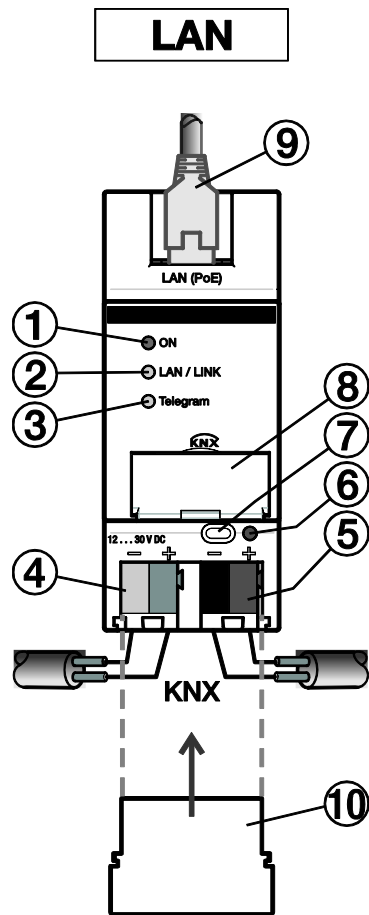
Encontrará la aplicación actual lista para descargar y la información detallada del software en Internet en www.abb.com/knx. Tras importarla al ETS, la aplicación se encuentra en la ventana *Catálogos*, en *Fabricantes/ABB/Dispositivos del sistema/Acoplador*.

El dispositivo no admite la función de cierre de un dispositivo KNX en el ETS. El bloqueo del acceso a todos los dispositivos del proyecto con una *clave BCU* no tendrá ningún efecto en este dispositivo. Este puede seguir leyéndose y programándose.

ABB i-bus® KNX Tecnología del aparato

2.2

Esquema de conexión

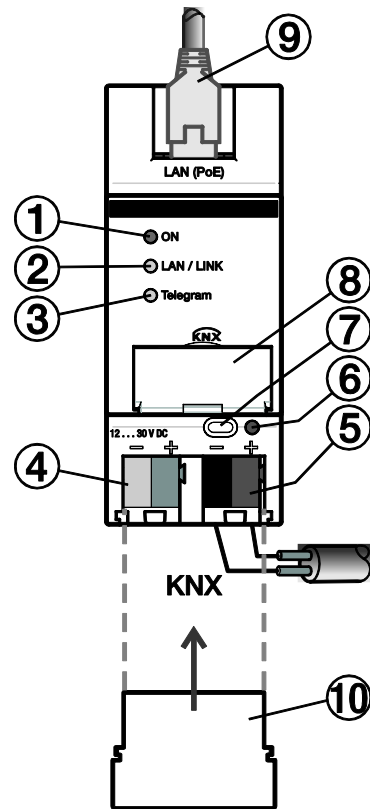


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IPR/S 3.1.1

- 1 LED ON
- 2 LED LAN/LINK
- 3 LED Telegrama
- 4 Conexión alimentación de tensión
- 5 Conexión KNX

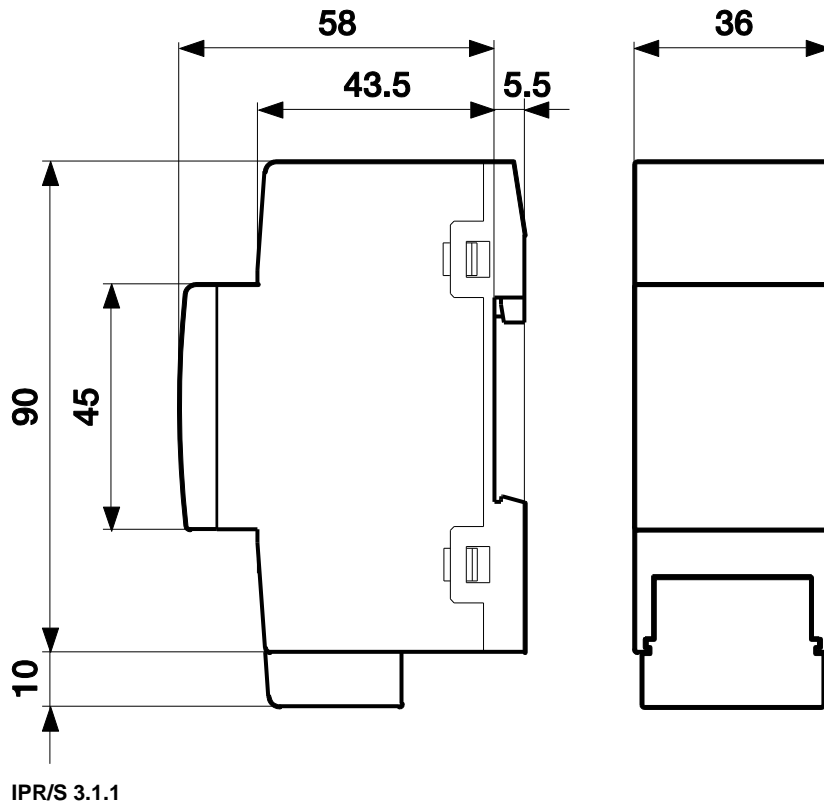
LAN/PoE



2CDC072010F0015

- 6 LED Programar
- 7 Tecla Programar
- 8 Portaletreiros
- 9 Conexión LAN o LAN/PoE
- 10 Tapa

2.3 Diagrama de dimensiones



2CDC072020F0015

2.4 Montaje e instalación

Este dispositivo es un aparato para montaje en raíl DIN para montar en distribuidores y realizar una fijación rápida en raíles de 35 mm según DIN EN 60 715.

El dispositivo puede montarse en cualquier posición.

La conexión con el bus se realiza mediante los bornes de conexión de bus suministrados. La denominación de los bornes se encuentra en la carcasa.

El dispositivo está listo para el servicio al conectar la tensión de bus y la tensión auxiliar.

Debe garantizarse la accesibilidad del dispositivo para operarlo, comprobarlo, inspeccionarlo, realizar su mantenimiento y repararlo (según DIN VDE 0100-520).

Requisito para la puesta en marcha

Para poner en marcha el dispositivo se necesita un PC con el ETS a partir de la versión ETS 3 V3.0f o posterior y una tensión de alimentación de entre 12 y 30 V CC. Alternativamente la alimentación puede llevarse a cabo a través de PoE (Power over Ethernet).

El dispositivo está listo para el servicio al conectar la tensión del bus y la tensión auxiliar.

El montaje y la puesta en marcha solo deben ser efectuados por electricistas. Para planificar y montar instalaciones eléctricas, así como instalaciones técnicas de seguridad para la detección de robo e incendio, deben observarse las normas, directivas, reglamentos y disposiciones del país correspondiente.

- El dispositivo debe protegerse contra la humedad, la suciedad y los daños durante el servicio, el transporte y el almacenamiento.
- El dispositivo debe funcionar solo respetando los datos técnicos especificados.
- El dispositivo solo debe funcionar dentro de la carcasa cerrada (distribuidor).
- Antes de realizar trabajos de montaje, debe desconectarse la tensión del dispositivo.



Peligro

Para evitar la peligrosa tensión de contacto causada por el retorno de diferentes conductores exteriores, es necesario desconectar todos los polos en caso de ampliación o modificación de la conexión eléctrica.

Estado de suministro

El dispositivo se suministra con la dirección física 15.15.0 y otras 5 direcciones físicas 15.15.100 para conexiones de túnel.

La dirección IP tiene ajustada la asignación automática (DHCP/AutoIP).

Nota

El dispositivo se entrega de fábrica con la opción *Reenviar*. Esta no se corresponde con el ajuste estándar de la aplicación pero facilita la puesta en marcha.

Después de la primera descarga se adopta el ajuste parametrizado.

Asignación de la dirección física

La asignación y programación de las direcciones físicas y los parámetros se efectúan en el ETS.

Para la asignación de la dirección física, el dispositivo dispone de una tecla *Programar*. El LED rojo *Programar* se enciende al accionarse la tecla. Se apaga cuando el ETS ha asignado la dirección física o si la tecla *Programar* se vuelve a pulsar.

ABB i-bus® KNX

Tecnología del aparato

Comportamiento de descarga

El dispositivo puede programarse de diferentes formas: por medio de un servidor de túnel integrado ("descarga local"), mediante enrutamiento KNXnet/IP o por medio de una interfaz de programación (USB o IP).

Para que el dispositivo pueda programarse deberá haber disponible una conexión a KNX TP (Twister Pair, par trenzado).

Aprox. 10 minutos después de que se realice la descarga se reinicia el dispositivo y se cierran todas las conexiones de túnel abiertas. Si en la descarga se ha cambiado la dirección IP del dispositivo, las conexiones de túnel deberán volver a configurarse manualmente en los clientes de túnel. Los clientes de túnel establecen la conexión con el servidor a través de la dirección IP.

La adopción de los datos parametrizados con el ETS se lleva a cabo aprox. 30-60 segundos después de la descarga.

Limpieza

Antes de la limpieza debe desconectarse la tensión del dispositivo. Los dispositivos sucios pueden limpiarse con un paño seco o con un paño humedecido en solución jabonosa. Está prohibido utilizar productos cáusticos o disolventes.

Mantenimiento

El dispositivo no requiere mantenimiento. En caso de daños sufridos, p. ej. durante el transporte y/o almacenamiento, no está permitida su reparación.

2.5 Descripción de las entradas y salidas

Entrada de tensión de alimentación entre 12 y 30 V CC

En la entrada para la tensión de alimentación solo puede conectarse corriente continua de entre 12 y 30 V. Recomendamos utilizar las fuentes de alimentación NT/S de nuestra gama de productos.

Atención

La tensión de alimentación debe ser de entre 12 y 30 V CC o el dispositivo deberá recibir alimentación mediante PoE (Power over Ethernet) según IEEE 802.3af clase 1.

¡Con una conexión de 230 V puede dañarse el dispositivo!

Conexión KNX

Para la conexión al bus KNX se utilizan los bornes de conexión de bus suministrados.

Nota

Para la programación es necesario el ETS 3 a partir de la versión 3.0f o posterior.

Conexión LAN

La conexión de red se lleva a cabo a través de una interfaz Ethernet-RJ45 para redes LAN. La interfaz de red puede funcionar con una velocidad de transferencia de 10/100 MBit/s. La actividad de la red se indica mediante el LED LAN/LINK en la parte frontal de la carcasa.

2.6 Elementos de mando

En el router IP no hay elementos de mando.

2.7 Elementos de visualización

En la parte frontal del IPR/S se encuentran tres LED de indicación:



ON



LAN/LINK



Telegrama

ON

- Después de conectar la tensión auxiliar, el LED se ilumina durante algunos segundos.
- Después de conectar la tensión auxiliar, el LED se ilumina primero de forma permanente. Después de aprox. 40 segundos, el LED comienza a parpadear hasta que el proceso de inicio finaliza por completo y después vuelve a iluminarse de forma permanente. Dependiendo del tamaño de la tabla de filtros, este proceso puede durar entre 5 y 60 segundos.

LAN/LINK

- El LED se ilumina cuando hay tensión auxiliar disponible y el router está conectado a una red Ethernet.
- El LED parpadea cuando el dispositivo detecta actividad en la red, por ejemplo cuando se intercambian datos.

Telegrama

- El LED se ilumina cuando el router está conectado a una red TP y el proceso de inicio ha finalizado por completo (véase LED "On").
- El LED parpadea cuando el dispositivo detecta actividad en la sublínea KNX TP1 (Twisted Pair 1, par trenzado 1), por ejemplo cuando se intercambian datos.

ABB i-bus® KNX

Puesta en marcha

3 Puesta en marcha

El IPR/S se parametriza con la aplicación y el Engineering Tool Software ETS.

Encontrará la aplicación en *Fabricantes/ABB/Dispositivos del sistema/Acoplador*.

Para la parametrización se necesita un PC u ordenador portátil con el ETS y una conexión al KNX.

3.1 Vista general

El router IP se parametriza con el Engineering Tool Software ETS 3 a partir de la versión 3.0f o posterior.

Algunas funciones (Unicast) se parametrizan por medio de una herramienta separada (i-bus® Tool).

Importante

Las aplicaciones para ETS 3 a partir de la versión 3.0f y para ETS 4, versión 4.1.7 o posterior se diferencian en sus funciones, véase [Vista general de versiones](#), pág. 6.
No es posible realizar una conversión.

Nota

La aplicación *Router IP/2.0* es compatible con el ETS 4 a partir de la versión 4.1.7 y con el ETS 5 a partir de la versión 5.0.4.

Nota

Encontrará una descripción de las funciones en la ayuda online de la i-bus® Tool.

3.2 Parámetros

Este capítulo describe los parámetros del router IP por medio de las ventanas de parámetros.

Las ventanas de parámetros son dinámicas, de modo que se habilitan más parámetros o ventanas de parámetros completas según la parametrización y la función de las salidas.

Los valores por defecto de los parámetros se representan subrayados, p. ej.:

Opciones: Sí
 No

Nota
Para todas las aplicaciones (ETS 3, ETS 4 y ETS 5) se crean las capturas de pantalla en el ETS 5. La representación puede diferir ligeramente. Los parámetros y las opciones son idénticos.

ABB i-bus® KNX

Puesta en marcha

3.2.1 Aplicación para ETS 4 y ETS 5 (Router IP/2.0)

3.2.1.1 Ventana de parámetros KNX -> LAN

En la ventana de parámetros *KNX -> LAN* se puede definir el procesamiento de los telegramas del sistema KNX a la red LAN.

Nota

El dispositivo se entrega de fábrica con la opción *Reenviar*. Esta no se corresponde con el ajuste estándar de la aplicación pero facilita la puesta en marcha.
Después de la primera descarga se adopta el ajuste parametrizado.

KNX->LAN	Telegramas de grupo Grupos principales 0...13	Filtrar
LAN->KNX	Telegramas de grupo Grupos principales 14...31	Filtrar
Ajustes IP	Telegramas con dirección física	<input checked="" type="radio"/> Filtrar <input type="radio"/> Bloquear
	Telegramas de difusión	<input checked="" type="radio"/> Reenviar <input type="radio"/> Bloquear
	Confirmación de telegrama para telegramas de grupo	<input checked="" type="radio"/> Solo con reenvío <input type="radio"/> Siempre
	En caso de direcciones de grupo sin restricciones rige:	<--- NOTA
	Grupo principal 0...13 => 1...28 671	
	Grupo principal 14...31 => 28 672...65 535	

ABB i-bus® KNX

Puesta en marcha

Telegramas de grupo Grupos principales 0...13

Opciones: [Filtrar](#)
[Reenviar](#)
[Bloquear](#)

Este parámetro determina si los telegramas con direcciones de grupo de los grupos principales 0 a 13 se deben filtrar, reenviar o bloquear.

- *Filtrar*: los telegramas con direcciones de grupo de los grupos principales 0 a 13 del KNX a la LAN se filtran según la tabla de filtros, calculada automáticamente por el ETS.
- *Reenviar*: todos los telegramas de grupo de los grupos principales 0 a 13 se reenvían sin tener en cuenta la tabla de filtros.

Importante

Este ajuste solo tiene sentido en la puesta en marcha y en el diagnóstico. En el servicio normal no debe utilizarse.

Dado que con este ajuste las líneas KNX pueden sobrecargarse, puede tener lugar una pérdida de telegramas.

- *Bloquear*: todos los telegramas de grupo del KNX a la LAN se bloquean sin tener en cuenta la tabla de filtros.

Telegramas de grupo Grupos principales 14...31

Opciones: [Filtrar](#)
[Reenviar](#)
[Bloquear](#)

Este parámetro determina si los telegramas con direcciones de grupo de los grupos principales 14 a 31 se deben filtrar, reenviar o bloquear.

Nota

A partir del ETS 4, versión 4.1.7 se pueden filtrar también los grupos principales 14...31. Para ello debe utilizarse la aplicación *Router IP/2.0*.

- *Filtrar*: los telegramas con direcciones de grupo de los grupos principales 14 a 31 del KNX a la LAN se filtran según la tabla de filtros, calculada automáticamente por el ETS.
- *Reenviar*: se reenvían todos los telegramas de grupo de los grupos principales 14 a 31.

Importante

Este ajuste solo tiene sentido en la puesta en marcha y en el diagnóstico. En el servicio normal no debe utilizarse.

Dado que con este ajuste las líneas KNX pueden sobrecargarse, puede tener lugar una pérdida de telegramas.

- *Bloquear*: no se transmite ningún telegrama de grupo de los grupos principales 14 a 31 del KNX a la LAN.

ABB i-bus® KNX

Puesta en marcha

Telegramas con dirección física

Opciones: Filtrar
Bloquear

Este parámetro determina si los telegramas con dirección física se filtran o se bloquean.

- *Filtrar*: solo se transmiten los telegramas del KNX a la LAN que deben salir de la línea del IPR/S a la LAN.
- *Bloquear*: los telegramas con dirección física no son procesados por el IPR/S. Con este ajuste no es posible enviar telegramas con dirección física desde la línea debajo del IPR/S a otra línea, por ejemplo, durante la programación.

Telegramas de difusión

Opciones: Reenviar
Bloquear

Este parámetro determina si los telegramas de difusión se reenvían o se bloquean.

- *Reenviar*: los telegramas de difusión se reenvían.
- *Bloquear*: los telegramas de difusión no son procesados por el IPR/S. Con este ajuste no es posible enviar telegramas de difusión desde la línea debajo del IPR/S a otra línea, por ejemplo, durante la programación.

Confirmación de telegrama para telegramas de grupo

Opciones: Solo con reenvío
Siempre

Este parámetro determina si el router IP debe confirmar los telegramas de grupo con un telegrama.

- *Solo con reenvío*: los telegramas de grupo solo se confirman (*Enviar ACK*) cuando también son reenviados por el router IP a la LAN. De este modo solo se confirman los telegramas que también se han introducido en la tabla de filtros del IPR/S.
- *Siempre*: todos los telegramas de grupo del KNX se confirman mediante el IPR/S.

En caso de direcciones de grupo sin restricciones rige:

Grupo principal 0...13 => 1...28 671

Grupo principal 14...31 => 28 672...65 535

Nota

En el ETS 4/ETS 5 no existe la posibilidad de asignar dos o tres niveles a las direcciones de grupo, sino de asignar sin restricciones. Si se selecciona la vista sin restricciones de la dirección de grupo, a los grupos principales 0...13 le corresponde la zona de subgrupos 1...28 671 y a los grupos principales 14...31 la zona de subgrupos 28 672...65 535. Encontrará más información a este respecto en la ayuda del ETS.

ABB i-bus® KNX

Puesta en marcha

3.2.1.2 Ventana de parámetros LAN -> KNX

En la ventana de parámetros LAN -> KNX se puede definir el procesamiento de los telegramas de la red LAN al sistema KNX.

KNX->LAN	Telegramas de grupo Grupos principales 0...13	Filtrar
LAN->KNX	Telegramas de grupo Grupos principales 14...31	Filtrar
Ajustes IP	Telegramas con dirección física	<input checked="" type="radio"/> Filtrar <input type="radio"/> Bloquear
	Telegramas de difusión	<input checked="" type="radio"/> Reenviar <input type="radio"/> Bloquear
	En caso de fallos de transmisión, repetir telegramas	Sí
	En caso de direcciones de grupo sin restricciones rige:	<--- NOTA
	Grupo principal 0...13 => 1...28 671	
	Grupo principal 14...31 => 28 672...65 535	

Telegramas de grupo Grupos principales 0...13

Opciones: Filtrar
 Reenviar
 Bloquear

Este parámetro determina si los telegramas con direcciones de grupo de los grupos principales 0 a 13 se deben filtrar, reenviar o bloquear.

- **Filtrar:** los telegramas con direcciones de grupo de los grupos principales 0 a 13 de la LAN al KNX se filtran según la tabla de filtros, calculada automáticamente por el ETS.
- **Reenviar:** todos los telegramas de grupo de los grupos principales 0 a 13 se reenvían sin tener en cuenta la tabla de filtros.

Importante

Este ajuste solo tiene sentido en la puesta en marcha y en el diagnóstico. En el servicio normal no debe utilizarse.

Dado que con este ajuste las líneas KNX pueden sobrecargarse, puede tener lugar una pérdida de telegramas.

- **Bloquear:** todos los telegramas de grupo de la LAN al KNX se bloquean sin tener en cuenta la tabla de filtros.

ABB i-bus® KNX

Puesta en marcha

Telegramas de grupo Grupos principales 14...31

Opciones: [Filtrar](#)
[Reenviar](#)
[Bloquear](#)

Este parámetro determina si los telegramas con direcciones de grupo de los grupos principales 14 a 31 se deben filtrar, reenviar o bloquear.

Nota

A partir del ETS 4, versión 4.1.7 se pueden filtrar también los grupos principales 14...31. Para ello debe utilizarse la aplicación *Router IP/2.0*.

- *Filtrar*: los telegramas con direcciones de grupo de los grupos principales 14 a 31 de la LAN al KNX se filtran según la tabla de filtros, calculada automáticamente por el ETS.
- *Reenviar*: se reenvían todos los telegramas de grupo de los grupos principales 14 a 31.

Importante

Este ajuste solo tiene sentido en la puesta en marcha y en el diagnóstico. En el servicio normal no debe utilizarse.

Dado que con este ajuste las líneas KNX pueden sobrecargarse, puede tener lugar una pérdida de telegramas.

- *Bloquear*: no se transmite ningún telegrama de grupo de los grupos principales 14 a 31 de la LAN al KNX.

Telegramas con dirección física

Opciones: [Filtrar](#)
[Bloquear](#)

Este parámetro determina si los telegramas con dirección física se filtran o se bloquean.

- *Filtrar*: solo se transmiten los telegramas de la LAN al KNX que deben salir de la línea del IPR/S a la LAN.
- *Bloquear*: los telegramas con dirección física no son procesados por el IPR/S. Con este ajuste no es posible enviar telegramas con dirección física desde la línea principal a la línea TP del KNX, por ejemplo, durante la programación.

Telegramas de difusión

Opciones: [Reenviar](#)
[Bloquear](#)

Este parámetro determina si los telegramas de difusión se reenvían o se bloquean.

- *Reenviar*: los telegramas de difusión se reenvían.
- *Bloquear*: los telegramas de difusión no son procesados por el IPR/S. Con este ajuste no es posible enviar telegramas de difusión desde la línea principal a la línea TP del KNX, por ejemplo, durante la programación.

ABB i-bus® KNX

Puesta en marcha

En caso de fallos de transmisión, repetir telegramas

Opciones: Sí
 No
 Personalizado

- *Sí*: si al transmitir un telegrama se detecta un fallo, el telegrama se repite hasta tres veces.
- *No*: la transmisión no se repite.
- *Personalizado*: el comportamiento se puede ajustar individualmente para cada uno de los tipos de telegrama.

Repetir telegramas dirigidos a grupos

Opciones: Sí
 No

- *Sí*: si al transmitir un telegrama dirigido a grupos se detecta un fallo, el telegrama se repite hasta tres veces.
- *No*: la transmisión no se repite.

Repetir telegramas con dirección física

Opciones: Sí
 No

- *Sí*: si al transmitir un telegrama con dirección física se detecta un fallo, el telegrama se repite hasta tres veces.
- *No*: la transmisión no se repite.

Repetir telegramas de difusión

Opciones: Sí
 No

- *Sí*: si al transmitir un telegrama de difusión se detecta un fallo, el telegrama se repite hasta tres veces.
- *No*: la transmisión no se repite.

En caso de direcciones de grupo sin restricciones rige:

Grupo principal 0...13 => 1...28 671

Grupo principal 14...31 => 28 672...65 535

Nota

En el ETS 4/ETS 5 no existe la posibilidad de asignar dos o tres niveles a las direcciones de grupo, sino de asignar sin restricciones. Si se selecciona la vista sin restricciones de la dirección de grupo, a los grupos principales 0...13 le corresponde la zona de subgrupos 1...28 671 y a los grupos principales 14...31 la zona de subgrupos 28 672...65 535. Encontrará más información a este respecto en la ayuda del ETS.

ABB i-bus® KNX

Puesta en marcha

3.2.1.3 Ventana de parámetros *Ajustes IP*

En la ventana de parámetros *Ajustes IP* se ajusta el tipo de comunicación del router IP a través de la IP.

KNX->LAN	Tipo de comunicación IP	<input checked="" type="radio"/> Multicast <input type="radio"/> Unicast
LAN->KNX		
Ajustes IP	El ajuste del nombre del dispositivo, de la dirección IP y de los servidores de túnel se lleva a cabo en la pantalla de propiedades del ETS.	<--- NOTA

Tipo de comunicación IP

Opciones: Multicast
Unicast

El tipo de comunicación IP determina qué tipo de telegramas envía el router IP a la red IP.

- *Multicast*: este es el tipo de comunicación determinado para KNXnet/IP por la Asociación KNX para dispositivos IP KNX. Este ajuste deberá mantenerse así y solo deberá modificarse cuando a través de la red existente sea necesario enviar telegramas como Unicast.

Encontrará más información sobre la dirección Multicast de enrutamiento en [Dirección Multicast de enrutamiento](#), pág. 28.

- *Unicast*: se desconecta el enrutamiento para este dispositivo.

Esta comunicación especial no se corresponde con la especificación KNXnet/IP. Para la configuración se necesita la ABB i-bus® Tool.

Nota
En la aplicación para el ETS 4 y para el ETS 5 no es posible limitar el rango de direcciones Multicast.

Nota
Encontrará una descripción de las funciones en la ayuda online de la i-bus® Tool.

Tanto al seleccionar *Multicast* como al seleccionar *Unicast* aparecerá la siguiente nota:

El ajuste del nombre del dispositivo, de la dirección IP y de los servidores de túnel se lleva a cabo en la pantalla de propiedades del ETS.

ABB i-bus[®] KNX

Puesta en marcha

Al seleccionar *Unicast* aparecerá además la siguiente nota:

¡Atención! Este ajuste desconecta el enrutamiento para este dispositivo. Los telegramas IP se enviarán ahora como Unicast a un máximo de 9 direcciones de destino.

La configuración Unicast se lleva a cabo con la ABB i-bus[®] Tool.

Véase la descripción de la comunicación Unicast en el capítulo [Telegramas KNX en la red](#), pág. 42.

La i-bus[®] Tool puede obtenerse gratuitamente en nuestra página web (www.abb.com/knx).

Para la i-bus[®] Tool no es necesario el ETS ni la instalación del Falcon.

Requisitos del sistema: un sistema operativo Windows a partir de la versión Windows 7 (Service Pack 3) y el .NET Framework 4.0.

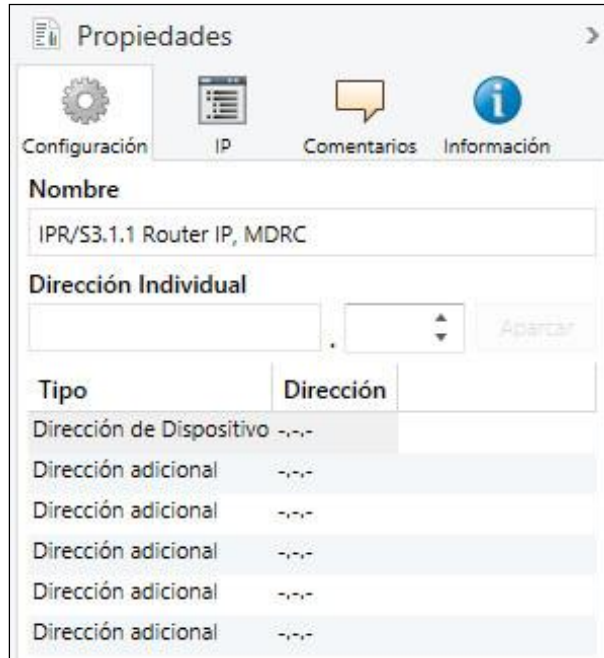
El Falcon 5.0 integrado es compatible solo con USB e interfaces IP (no RS232).

Nota
Encontrará una descripción de las funciones en la ayuda online de la i-bus [®] Tool.

ABB i-bus® KNX

Puesta en marcha

La configuración restante de los parámetros IP (nombre del dispositivo, asignación de la dirección IP mediante DHCP o de forma fija) se lleva a cabo en la ventana de propiedades correspondiente del ETS.



En la ventana de propiedades *Configuración* se puede introducir el nombre del dispositivo. En el campo *Nombre* se puede modificar el nombre que se carga en el dispositivo.

El nombre del dispositivo sirve para identificarlo en la LAN. Si se lleva a cabo una búsqueda, por ejemplo, mediante el ETS, cada dispositivo KNXnet/IP comunica su nombre y puede así ser asignado. De este modo con los nombres IPR/S, EG, UV7 se puede, por ejemplo, comunicar también el lugar de instalación del dispositivo.

Nota

En la entrega, el nombre estándar del dispositivo es "IP Router". Después de la primera descarga el nombre del dispositivo que se ha introducido en la ventana de propiedades del ETS se carga en el dispositivo.

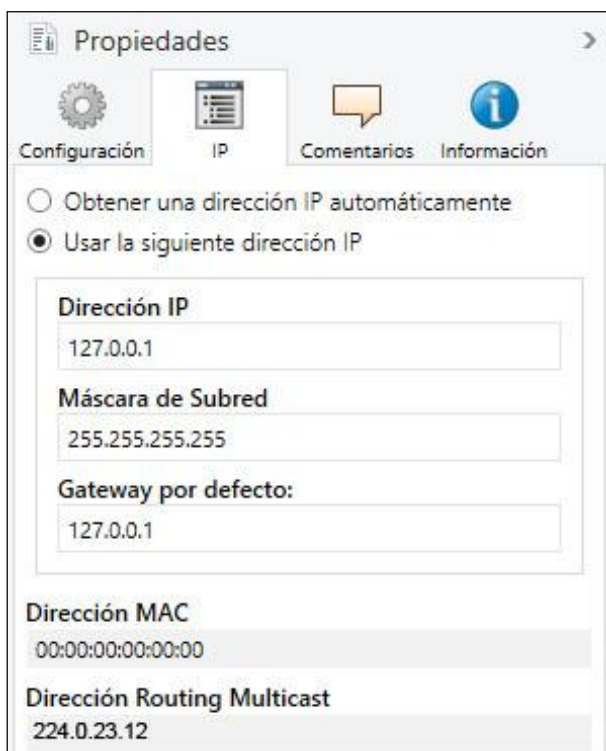
Atención

En el dispositivo solo se cargan los 30 primeros caracteres del nombre del dispositivo, el resto se acorta.

ABB i-bus® KNX

Puesta en marcha

En la ventana de propiedades *IP* se puede definir la dirección IP.



Propiedades

Configuración IP Comentarios Información

Obtener una dirección IP automáticamente

Usar la siguiente dirección IP

Dirección IP
127.0.0.1

Máscara de Subred
255.255.255.255

Gateway por defecto:
127.0.0.1

Dirección MAC
00:00:00:00:00:00

Dirección Routing Multicast
224.0.23.12

Para configurar la dirección IP están disponibles las siguientes opciones:

Opciones: Obtener una dirección IP automáticamente
Usar la siguiente dirección IP

- *Obtener una dirección IP automáticamente:* en el ajuste estándar, el router IP espera la asignación de una dirección IP por medio de un servidor DHCP (dynamic host configuration protocol). Si se solicita, este servidor asigna una dirección IP libre al dispositivo. Si en la red no hay disponible ningún servidor DHCP o este no responde, el dispositivo iniciará un proceso automático de asignación de IP. Se asigna a sí mismo una dirección del rango reservado para direcciones IP automáticas (169.254.xxx.yy).

Encontrará más información sobre el DHCP en el cap. [Asignación de la dirección IP](#), pág. 41.

- *Usar la siguiente dirección IP:* si en la red no hay ningún servidor DHCP instalado o la dirección IP debe ser siempre la misma, se puede asignar también una dirección fija.

Dirección IP

Opciones: 192.168.0.3

Máscara de subred

Opciones: 255.255.255.0

Pasarela estándar

Opciones: 192.168.0.1

Dirección MAC

Opciones: 00:00:00:00:00:00

ABB i-bus[®] KNX

Puesta en marcha

Nota

Aquí solo se muestra la dirección Multicast de enrutamiento.

Encontrará más información sobre la dirección Multicast de enrutamiento en [Dirección Multicast de enrutamiento](#), pág. 28.

Nota

La dirección MAC se consulta después de una descarga desde el dispositivo.

Además, la dirección MAC se encuentra en el dispositivo y puede determinarse alternativamente por medio de la i-bus[®] Tool.

Nota

Encontrará una descripción de las funciones en la ayuda online de la i-bus[®] Tool.

ABB i-bus® KNX

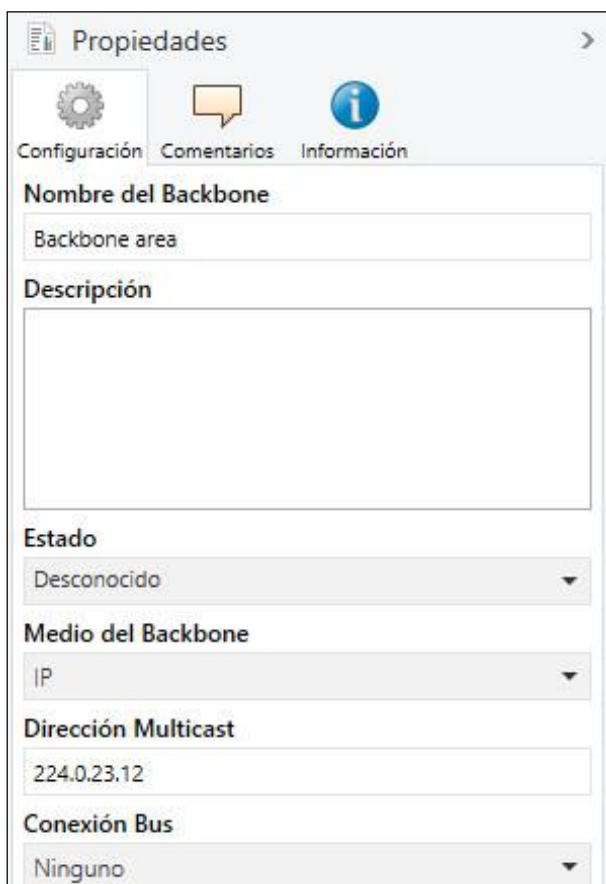
Puesta en marcha

Dirección Multicast de enrutamiento (estándar = 224.0.23.12)

Opciones: 224.0.23.12

La dirección Multicast de enrutamiento determina la dirección de destino de los telegramas IP del IPR/S. La dirección predeterminada 224.0.23.12 es la dirección establecida para KNXnet/IP por la Asociación KNX junto con la IANA para dispositivos IP KNX. Esta dirección debe mantenerse así y solo deberá modificarse cuando a través de la red disponible sea necesario utilizar otra dirección del rango 224.0.0.0 a 239.255.255.255 (rango reservado para direcciones Multicast).

El ajuste de la dirección Multicast de enrutamiento se lleva a cabo en el ETS, en la vista *Topología* (selección de la topología, a continuación se puede ajustar la dirección Multicast de enrutamiento en la ventana de propiedades, en la pestaña *Configuración*):



The screenshot shows the 'Propiedades' (Properties) window in ETS, with the 'Configuración' (Configuration) tab selected. The window contains several fields and dropdown menus:

- Nombre del Backbone:** Backbone area
- Descripción:** (Empty text area)
- Estado:** Desconocido (dropdown menu)
- Medio del Backbone:** IP (dropdown menu)
- Dirección Multicast:** 224.0.23.12 (text input field)
- Conexión Bus:** Ninguno (dropdown menu)

Importante

Todos los routers IP u otros dispositivos KNXnet/IP que deban intercambiar telegramas en la red IP deberán utilizar la misma dirección Multicast de enrutamiento.

Si los dispositivos deben operarse en la misma red, pero no deben intercambiar telegramas, se deberán utilizar direcciones Multicast de enrutamiento diferentes.

ABB i-bus® KNX

Puesta en marcha

3.2.2 Aplicación para ETS 3 (Router IP/1.1)

3.2.2.1 Ventana de parámetros KNX -> LAN

En la ventana de parámetros *KNX -> LAN* se puede definir el procesamiento de los telegramas del sistema KNX a la red LAN.

Nota

El dispositivo se entrega de fábrica con la opción *Reenviar*. Esta no se corresponde con el ajuste estándar de la aplicación pero facilita la puesta en marcha. Después de la primera descarga se adopta el ajuste parametrizado.

KNX->LAN	Telegramas de grupo Grupos principales 0...13	Filtrar
LAN->KNX		
Ajustes IP	Telegramas de grupo Grupos principales 14...31	<input checked="" type="radio"/> Reenviar <input type="radio"/> Bloquear
Tipo de comunicación IP	Telegramas con dirección física y telegramas de difusión	<input checked="" type="radio"/> Filtrar <input type="radio"/> Bloquear
	Confirmación de telegrama para telegramas de grupo	<input checked="" type="radio"/> Solo con reenvío <input type="radio"/> Siempre

Telegramas de grupo Grupos principales 0...13

Opciones: Filtrar
 Reenviar
 Bloquear

Este parámetro determina si los telegramas con direcciones de grupo de los grupos principales 0 a 13 se deben filtrar, reenviar o bloquear.

- *Filtrar*: los telegramas con direcciones de grupo de los grupos principales 0 a 13 del KNX a la LAN se filtran según la tabla de filtros, calculada automáticamente por el ETS.
- *Reenviar*: todos los telegramas de grupo de los grupos principales 0 a 13 se reenvían sin tener en cuenta la tabla de filtros.

Importante

Este ajuste solo tiene sentido en la puesta en marcha y en el diagnóstico. En el servicio normal no debe utilizarse. Dado que con este ajuste las líneas KNX pueden sobrecargarse, puede tener lugar una pérdida de telegramas.

- *Bloquear*: todos los telegramas de grupo del KNX a la LAN se bloquean sin tener en cuenta la tabla de filtros.

ABB i-bus® KNX

Puesta en marcha

Telegramas de grupo Grupos principales 14...31

Opciones: Reenviar
Bloquear

Este parámetro determina si los telegramas con direcciones de grupo de los grupos principales 14 a 31 se reenvían o se bloquean.

Dado que el ETS 3 no calcula ninguna tabla de filtros para los grupos principales 14 a 31, estas direcciones de grupo solo pueden reenviarse o bloquearse.

Nota

A partir del ETS 4, versión 4.1.7 se pueden filtrar también los grupos principales 14...31. Para ello debe utilizarse la aplicación *Router IP/2.0*. Encontrará las descripciones de la aplicación para el ETS 4 en el capítulo [Ventana de parámetros KNX -> LAN](#), pág. 17.

- *Reenviar*: se reenvían todos los telegramas de grupo de los grupos principales 14 a 31.
- *Bloquear*: no se transmite ningún telegrama de grupo de los grupos principales 14 a 31 del KNX a la LAN.

Telegramas con dirección física y telegramas de difusión

Opciones: Filtrar
Bloquear

Este parámetro determina si los telegramas con dirección física o los telegramas de difusión se filtran o se bloquean.

- *Filtrar*: solo se transmiten los telegramas del KNX a la LAN que deben salir de la línea del IPR/S a la LAN.
- *Bloquear*: los telegramas con dirección física y los telegramas de difusión no son procesados por el IPR/S. Con este ajuste no es posible programar otros dispositivos en la instalación con el ETS desde la línea debajo del IPR/S, ni mediante conexión USB ni con ayuda de la función de túnel.

Confirmación de telegrama para telegramas de grupo

Opciones: Solo con reenvío
Siempre

Este parámetro determina si el router IP debe confirmar los telegramas de grupo con un telegrama.

- *Solo con reenvío*: los telegramas de grupo solo se confirman (*Enviar ACK*) cuando también son reenviados por el router IP a la LAN. De este modo solo se confirman los telegramas que también se han introducido en la tabla de filtros del IPR/S.
- *Siempre*: todos los telegramas de grupo del KNX se confirman mediante el IPR/S.

ABB i-bus® KNX

Puesta en marcha

3.2.2.2 Ventana de parámetros LAN -> KNX

En la ventana de parámetros LAN -> KNX se puede definir el procesamiento de los telegramas de la red LAN al sistema KNX.

KNX->LAN	Telegramas de grupo Grupos principales 0...13	Filtrar
LAN->KNX		
Ajustes IP	Telegramas de grupo Grupos principales 14...31	<input checked="" type="radio"/> Reenviar <input type="radio"/> Bloquear
Tipo de comunicación IP	Telegramas con dirección física y telegramas de difusión	<input checked="" type="radio"/> Filtrar <input type="radio"/> Bloquear

Telegramas de grupo Grupos principales 0...13

Opciones: Filtrar
Reenviar
Bloquear

Este parámetro determina si los telegramas con direcciones de grupo de los grupos principales 0 a 13 se deben filtrar, reenviar o bloquear.

- *Filtrar*: los telegramas con direcciones de grupo de los grupos principales 0 a 13 de la LAN al KNX se filtran según la tabla de filtros, calculada automáticamente por el ETS.
- *Reenviar*: todos los telegramas de grupo de los grupos principales 0 a 13 se reenvían sin tener en cuenta la tabla de filtros.

Importante

Este ajuste solo tiene sentido en la puesta en marcha y en el diagnóstico. En el servicio normal no debe utilizarse.

Dado que con este ajuste las líneas KNX pueden sobrecargarse, puede tener lugar una pérdida de telegramas.

- *Bloquear*: todos los telegramas de grupo de la LAN al KNX se bloquean sin tener en cuenta la tabla de filtros.

ABB i-bus® KNX

Puesta en marcha

Telegramas de grupo Grupos principales 14...31

Opciones: Reenviar
Bloquear

Este parámetro determina si los telegramas con direcciones de grupo de los grupos principales 14 a 31 se reenvían o se bloquean.

Dado que el ETS 3 no calcula ninguna tabla de filtros para los grupos principales 14 a 31, estas direcciones de grupo solo pueden reenviarse o bloquearse.

Nota

A partir del ETS 4, versión 4.1.7 se pueden filtrar también los grupos principales 14...31. Para ello debe utilizarse la aplicación *Router IP/2.0*. Encontrará las descripciones de la aplicación para el ETS 4 en el capítulo [Ventana de parámetros LAN -> KNX](#), pág. 20.

- *Reenviar*: se reenvían todos los telegramas de grupo de los grupos principales 14 a 31.
- *Bloquear*: no se transmite ningún telegrama de grupo de los grupos principales 14 a 31 de la LAN al KNX.

Telegramas con dirección física y telegramas de difusión

Opciones: Filtrar
Bloquear

Este parámetro determina si los telegramas con dirección física o los telegramas de difusión se filtran o se bloquean.

- *Filtrar*: solo se transmiten los telegramas de la LAN al KNX que deben transmitirse en la línea.
- *Bloquear*: los telegramas con dirección física y los telegramas de difusión no son procesados por el IPR/S. Con este ajuste se bloquean los telegramas con dirección física o los telegramas de difusión de la LAN al KNX.

ABB i-bus® KNX

Puesta en marcha

3.2.2.3

Ventana de parámetros *Ajustes IP*

En la ventana de parámetros *Ajustes IP* se llevan a cabo los ajustes en la página IP del router IP.

KNX->LAN	Nombre del dispositivo [máx. 30 caract.]	ABB IP Router IPR/S3.1.1
LAN->KNX	Asignación de la dirección IP	<input checked="" type="radio"/> Automática (DHCP, AutoIP) <input type="radio"/> Fija
Ajustes IP		
Tipo de comunicación IP		

Nombre del dispositivo [máx. 30 caract.]

Opciones: ABB IP Router IPR/S3.1.1

El nombre del dispositivo sirve para identificarlo en la LAN. Si se lleva a cabo una búsqueda, por ejemplo, mediante el ETS, cada dispositivo KNXnet/IP comunica su nombre y puede así ser asignado. De este modo con los nombres IPR/S, EG, UV7 se puede, por ejemplo, comunicar también el lugar de instalación del dispositivo.

El texto puede tener una longitud máxima de 30 caracteres. Este nombre también se muestra cuando el dispositivo se fija en el ETS como interfaz de comunicación.

Nota

En la entrega, el nombre estándar del dispositivo es "IP Router". Después de la primera descarga se adopta el nombre del dispositivo de la aplicación.

Para obtener más información consulte [Uso de los servidores de túnel integrados](#), pág. 38

Asignación de la dirección IP

Opciones: Automática (DHCP, AutoIP)
Fija

- *Automática (DHCP, AutoIP)*: en el ajuste estándar, el router IP espera la asignación de una dirección IP por medio de un servidor DHCP (dynamic host configuration protocol). Si se solicita, este servidor asigna una dirección IP libre al dispositivo. Si en la red no hay disponible ningún servidor DHCP o este no responde, el dispositivo iniciará un proceso automático de asignación de IP. Se asigna a sí mismo una dirección del rango reservado para direcciones IP automáticas (169.254.xxx.yyy).
- *Fija*: si en la red no hay ningún servidor DHCP instalado o la dirección IP debe ser siempre la misma, se puede asignar también una dirección fija.

La ventana de parámetros se amplía con los ajustes de la dirección IP.

ABB i-bus® KNX

Puesta en marcha

Estos parámetros solo son visibles cuando se ha seleccionado la opción *Fija* para el parámetro *Asignación de la dirección IP*.

KNX->LAN	Nombre del dispositivo [máx. 30 caract.]	ABB IP Router IPR/S3.1.1
LAN->KNX		
Ajustes IP	Asignación de la dirección IP	<input type="radio"/> Automática (DHCP, AutoIP) <input checked="" type="radio"/> Fija
Tipo de comunicación IP	Dirección IP	
	Byte 1	192
	Byte 2	168
	Byte 3	0
	Byte 4	222
	Máscara de subred	
	Byte 1	255
	Byte 2	255
	Byte 3	255
	Byte 4	0
	Pasarela estándar	
	Byte 1	0
	Byte 2	0
	Byte 3	0
	Byte 4	0

Dirección IP

Byte x

Opciones: 0...255

La dirección IP es la dirección unívoca del router IP en la LAN.

Esta dirección se debe introducir por bytes, por ejemplo, para la dirección 192.168.0.222 de la siguiente manera:

Byte 1: 192
Byte 2: 168
Byte 3: 0
Byte 4: 222

ABB i-bus[®] KNX

Puesta en marcha

Máscara de subred

Byte x

Opciones: 0...255

La *Máscara de subred* define la clase de red. La máscara de subred deberá ajustarse como corresponda dependiendo del número y de la estructura de las subredes. En el caso más sencillo de una red pequeña, deberá ajustarse la máscara de subred 255.255.255.0 de la siguiente forma:

Byte 1:	255
Byte 2:	255
Byte 3:	255
Byte 4:	0

Pasarela estándar

Byte x

Opciones: 0...255

El parámetro *Pasarela estándar* proporciona el punto de conexión, por ejemplo, la dirección IP de un router entre redes, a través del cual se deben transmitir los telegramas IP. Estas pasarelas solo están disponibles en redes grandes. Para redes pequeñas se puede mantener el ajuste 0.0.0.0.

3.2.2.4 Ventana de parámetros *Tipo de comunicación IP (Multicast)*

En esta ventana de parámetros se ajusta el tipo de comunicación IP *Multicast*.

KNX->LAN	Tipo de comunicación IP	<input checked="" type="radio"/> Multicast <input type="radio"/> Unicast
LAN->KNX	Dirección Multicast de enrutamiento IP	
Ajustes IP	Byte 1 [224...239]	224
Tipo de comunicación IP	Byte 2	0
	Byte 3	23
	Byte 4	12

Tipo de comunicación IP

Opciones: Multicast
Unicast

El tipo de comunicación IP determina qué tipo de telegramas envía el router IP a la red IP.

- *Multicast*: este es el tipo de comunicación determinado para KNXnet/IP por la Asociación KNX para dispositivos IP KNX. Este ajuste deberá mantenerse así y solo deberá modificarse cuando a través de la red sea necesario enviar telegramas como Unicast.
- *Unicast*: se desconecta el enrutamiento para este dispositivo.

Esta comunicación especial no se corresponde con la especificación KNXnet/IP. Para la configuración se necesita la ABB i-bus® Tool.

Dirección Multicast de enrutamiento IP

Byte 1 [224...239]

Opciones: 224...239

Byte 2, 3, 4

Opciones: 0...255

La dirección Multicast de enrutamiento IP determina la dirección de destino de los telegramas IP del IPR/S. La dirección predeterminada 224.0.23.12 es la dirección establecida para KNXnet/IP por la Asociación KNX junto con la IANA para dispositivos IP KNX. Esta dirección debe mantenerse así y solo deberá modificarse cuando a través de la red disponible sea necesario utilizar otra dirección.

Importante

Todos los routers IP u otros dispositivos KNXnet/IP que deban intercambiar telegramas en la red IP deberán utilizar la misma dirección Multicast de enrutamiento.

Si los dispositivos deben operarse en la misma red, pero no deben intercambiar telegramas, se deberán utilizar direcciones Multicast de enrutamiento diferentes.

ABB i-bus[®] KNX

Puesta en marcha

3.2.2.5 Ventana de parámetros *Tipo de comunicación IP (Unicast)*

Al seleccionar la opción *Unicast* aparece la siguiente nota:

¡Atención! Este ajuste desconecta el enrutamiento para este dispositivo. Los telegramas IP se enviarán ahora como Unicast a un máximo de 9 direcciones de destino.

La configuración Unicast se lleva a cabo con la ABB i-bus[®] Tool.

Véase la descripción de la comunicación Unicast en el capítulo [Telegramas KNX en la red](#), pág. 42.

La i-bus[®] Tool puede obtenerse gratuitamente en nuestra página web (www.abb.com/knx).

Para la i-bus[®] Tool no es necesario el ETS ni la instalación del Falcon.

Requisitos del sistema: un sistema operativo Windows a partir de la versión Windows 7 (Service Pack 3) y el .NET Framework 4.0.

El Falcon 5.0 integrado es compatible solo con USB e interfaces IP (no RS232).

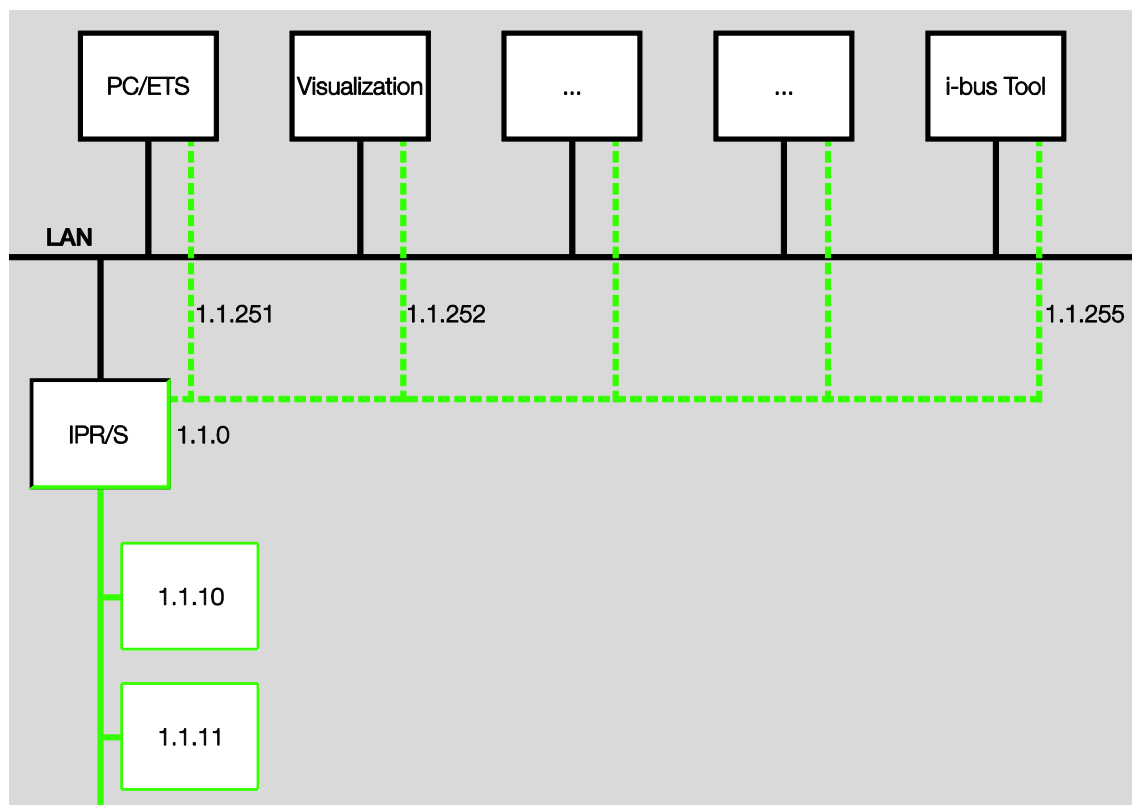
Nota
Encontrará una descripción de las funciones en la ayuda online de la i-bus [®] Tool.

3.3 Objetos de comunicación

El router IP IPR/S no cuenta con objetos de comunicación KNX.

3.4 Uso de los servidores de túnel integrados

El router IP ofrece 5 direcciones físicas adicionales que pueden utilizarse para una conexión de túnel. Estos servidores de túnel pueden utilizarse con el ETS como interfaz de programación o con otro cliente, por ejemplo, una visualización.



En tunelización se conecta un cliente con una línea de bus. La tunelización utiliza UDP, pero contiene una capa de enlace para que los telegramas se repitan en caso de fallo.

Nota

La dirección física para la conexión de túnel debe ajustarse a la topología. Por ello, las direcciones deben seleccionarse del rango de direcciones de la línea secundaria. En la entrega todos los servidores de túnel cuentan con la dirección 15.15.100.

La parametrización de las conexiones de túnel depende de la versión del ETS que se utilice.

- En el ETS 4 y en el ETS 5 se asignan las primeras 5 direcciones libres en la línea, después de que el router se haya añadido a una línea.
- En el ETS 3 hay disponible 1 conexión de túnel.

ABB i-bus® KNX

Puesta en marcha

3.4.1 Ajustes en el ETS 4/ETS 5

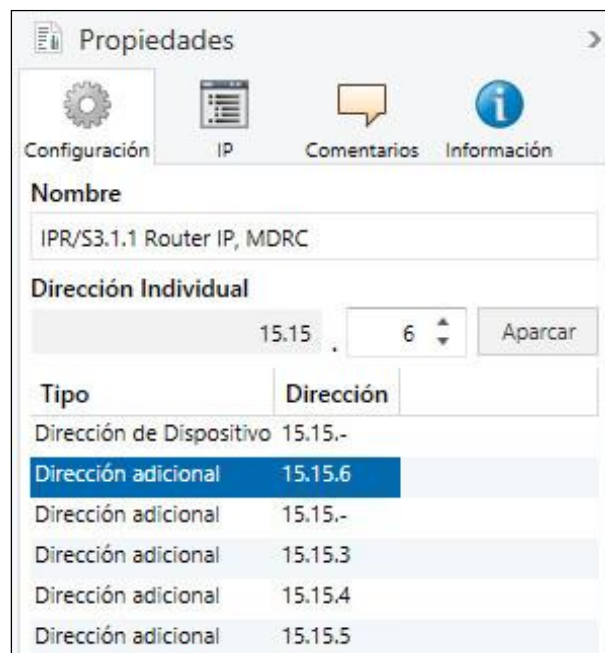
En el ETS, a partir de la versión ETS 4, hay disponible una ventana de propiedades adicional para el ajuste de las direcciones físicas adicionales (a partir de la aplicación *Router IP/2.0*).

Después de añadir el router a la línea, el ETS reserva automáticamente las primeras 5 direcciones libres de esta línea para los servidores de túnel del router (ETS 4 y ETS 5). Esta es una propiedad del ETS y no puede modificarse.

Aunque en el momento de la entrega del dispositivo las 5 direcciones están establecidas en 15.15.100, después de la primera descarga las direcciones se modifican y pasan a ser las primeras direcciones libres del proyecto.

Si este ajuste no es el que desea, se puede modificar manualmente en la ventana de propiedades.

Modificación de la dirección



Para modificar la dirección, marque la dirección actual del dispositivo o la dirección adicional y modifique la cifra deseada utilizando la flecha hacia arriba o hacia abajo. Marcando otra dirección se guarda la dirección modificada.

Las direcciones modificadas se adoptarán en el dispositivo tras una descarga.

Aparcar

Si para un túnel está activada la opción *Aparcar*, este túnel no se utilizará.

Si en todos los servidores de túnel se selecciona la opción *Aparcar*, todos los servidores de túnel recibirán la dirección 15.15.255. De este modo solo está disponible 1 servidor de túnel.

ABB i-bus[®] KNX

Puesta en marcha

3.4.2 Ajustes en el ETS 3

En el ETS 3 se lleva a cabo la asignación de la dirección física adicional por medio del menú *Extras* → *Opciones* → *Comunicación* → *Ajustes*.

4 Planificación y uso

4.1 El router IP en la red

El router IP está diseñado para utilizarse en redes 10/100-BaseT según IEEE 802.3. El dispositivo cuenta con una función AutoSensing y ajusta la velocidad de transmisión automáticamente (10 o 100 MBit).

4.1.1 Asignación de la dirección IP

DHCP/AutoIP

La dirección IP del dispositivo puede recibirse de un servidor DHCP. Para ello es necesario ajustar una asignación automática de la dirección IP en el ETS, véase [Ventana de parámetros Ajustes IP](#), pág. 23 (para aplicación *Router IP/2.0*) o [Ventana de parámetros Ajustes IP](#), pág. 33 (para aplicación *Router IP/1.1*). Si en este ajuste no se encuentra ningún servidor DHCP, el dispositivo inicia un procedimiento AutoIP y se asigna por sí mismo una dirección IP del rango 169.254.xxx.yyy.

La dirección IP que recibe el dispositivo en el inicio (mediante DHCP o AutoIP) se mantendrá hasta el siguiente reinicio (desconectar/conectar o programación nueva) o hasta que haya disponible un servidor DHCP.

Al iniciar no hay ningún servidor DHCP disponible:

Si al iniciar el router IP no hay disponible ningún servidor DHCP, el dispositivo se asigna a sí mismo una dirección AutoIP. A continuación el router busca cíclicamente (3 telegramas en intervalos de 3 segundos, a continuación una pausa de 20 segundos) un servidor DHCP. En cuanto vuelva a haber disponible un servidor se utilizará la dirección asignada por el servidor DHCP.

El servidor DHCP sufre un fallo (el dispositivo ya ha recibido una dirección IP del DHCP):

Hasta que finalice el tiempo de la concesión (duración de la validez de la dirección IP, el servidor DHCP es el encargado de determinarlo en la asignación de la dirección IP) no se tienen en cuenta las solicitudes para prorrogar los derechos de uso de esta dirección IP. La dirección IP se sigue utilizando.

Cuando transcurre el tiempo de la concesión o después de una descarga, los dispositivos buscan una dirección AutoIP.

Dirección IP fija

Si se realiza una asignación fija de la dirección IP del IPR/S, en el ETS se podrá ajustar una dirección IP (así como una máscara de subred y una pasarela estándar) fija, véase [Ventana de parámetros Ajustes IP](#), pág. 23 (para la aplicación *Router IP/2.0*) o [Ventana de parámetros Ajustes IP](#), pág. 33 (para la aplicación *Router IP/1.1*).

4.1.2 Telegramas KNX en la red (enrutamiento)

Nota

Al diseñar el sistema KNX se debe tener en cuenta que el número de telegramas transmitidos también está limitado al utilizar el router IP. Debido a la elevada velocidad de transferencia en la página IP (10/100 MBit/s) pueden perderse telegramas en caso de un gran volumen de datos dependiente del sistema en la línea TP1 (9,6 kBit/s).

Nota

Durante un desbordamiento de IP, TCP o UDP (acceso desde Internet) el router IP no está disponible. Todos los servicios vuelven a estar disponibles cuando el desbordamiento haya finalizado. Para evitar estas reacciones se debe ajustar una limitación del número de telegramas en el nivel de red. Para ello póngase en contacto con su administrador de red.

Multicast

El router IP envía telegramas desde el KNX a la red IP según la especificación de protocolo KNXnet/IP. En la configuración estándar, estos telegramas se envían como telegramas Multicast a la dirección IP Multicast 224.0.23.12, puerto 3671. Esta dirección IP Multicast es la dirección establecida para KNXnet/IP por la Asociación KNX junto con la IANA para dispositivos IP KNX. Esta dirección debe mantenerse así y solo deberá modificarse cuando a través de la red disponible sea necesario utilizar otra dirección.

Para que varios routers IP puedan comunicarse entre sí en la red, se deberá poder establecer una comunicación Multicast entre los dispositivos.

Dependiendo del tipo de red y del ajuste de los componentes de red utilizados, p. ej. router, interruptor o firewall, es posible que la dirección IP Multicast 224.0.23.12 deba desbloquearse primero explícitamente.

Para ello póngase en contacto con su administrador de red.

Multicast hace referencia a la comunicación de un emisor con un grupo de receptores. El router IP envía los telegramas KNX en paquete como telegramas UPD/IP a la red IP y todos los routers IP que tienen parametrizada la misma dirección Multicast reciben estos telegramas y los analizan.

Siempre que un telegrama esté fijado para la sublínea correspondiente, el router IP lo envía a la línea, de lo contrario se descarta.

Para más información véase:

Para ETS 4/ETS 5: [Ventana de parámetros Ajustes IP](#), pág. 23.

Para ETS 3: [Ventana de parámetros Tipo de comunicación IP \(Multicast\)](#), pág. 36.

ABB i-bus® KNX

Planificación y uso

Unicast

Si en una red no es posible establecer una comunicación Multicast, los routers IP de ABB podrán comunicarse entre sí también mediante Unicast. En un grupo Unicast se pueden integrar hasta 10 routers IP de ABB. A continuación se le asignan a cada router 9 direcciones IP a las que enviará sus telegramas.

Unicast hace referencia a la comunicación general entre un emisor y un receptor. Por lo tanto, el router establece una conexión de comunicación con cada router IP dentro del grupo Unicast.

La configuración de este grupo Unicast se ajusta de forma sencilla y automática con la ABB i-bus® Tool.

También es posible enlazar un cliente (p. ej.: una visualización) a este grupo Unicast. En este caso, una de las 10 direcciones Unicast está ocupada por el cliente y aún pueden enlazarse 9 routers IP.

Encontrará una descripción más detallada de la configuración con la i-bus® Tool en la ayuda de la i-bus® Tool (véase cap. [La i-bus® Tool](#), pág. 47).

Nota

En cuanto se cambie al parámetro *Unicast* en el ETS, en el apartado de tipo de comunicación IP la función *Multicast* quedará desactivada. A continuación, los dispositivos no podrán programarse mediante enrutamiento Multicast, sino solo mediante los servidores de túnel integrados o mediante una interfaz de programación separada.

Para más información véase:

Para ETS 4/ETS 5: [Ventana de parámetros Ajustes IP](#), pág. 23.

Para ETS 3: [Ventana de parámetros Tipo de comunicación IP \(Unicast\)](#), pág. 37.

Nota

Encontrará una descripción de las funciones en la ayuda online de la i-bus® Tool.

Nota

- Al utilizar el tipo de comunicación Unicast deberá asegurarse de que la dirección IP del router no cambie durante el servicio. Para ello deberá asignarse una dirección IP fija o deberán realizarse los ajustes correspondientes en el servidor DHCP.
- A partir de la versión de la aplicación Router IP/2.0, el ETS actualizará todos los parámetros IP en caso de modificación de la dirección física. Esto significa que incluso cuando en el ETS solo se selecciona la opción *Programar dirección física*, se volverá a cargar el nombre del dispositivo, la dirección Multicast, el tipo de comunicación IP (DHCP, AutoIP, fija), la dirección IP, la máscara de subred, la pasarela estándar y todas las direcciones de túnel.
En este caso deberá volverse a realizar la configuración de Unicast con la i-bus® Tool.

ABB i-bus® KNX

Planificación y uso

4.1.3 IPR/S como acoplador de zona

En las instalaciones KNX, el router IP puede adoptar la función de un acoplador de zona. Para ello deberá recibir la dirección física de un acoplador de zona (1.0.0...15.0.0). En un proyecto ETS se pueden crear hasta 15 zonas con acopladores de zona.

La siguiente imagen muestra esta topología con varios routers IP como acopladores de zona y acopladores de línea KNX (LK/S).

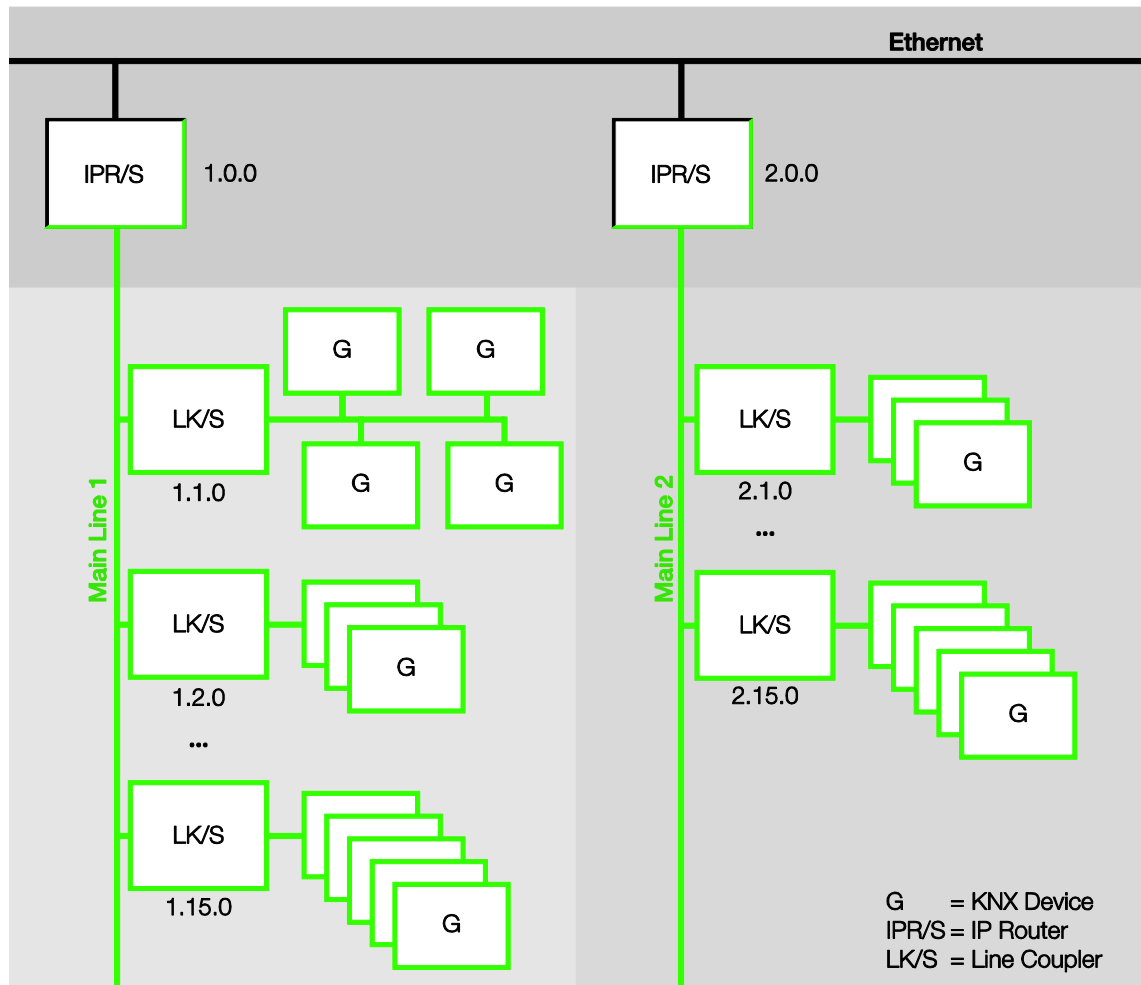


ABB i-bus[®] KNX Planificación y uso

4.1.4 IPR/S como acoplador de línea

En las instalaciones KNX, el router IP puede adoptar la función de un acoplador de línea. Para ello deberá recibir la dirección física de un acoplador de línea (1.1.0...15.15.0).

La siguiente imagen muestra esta topología con varios routers IP como acopladores de línea.

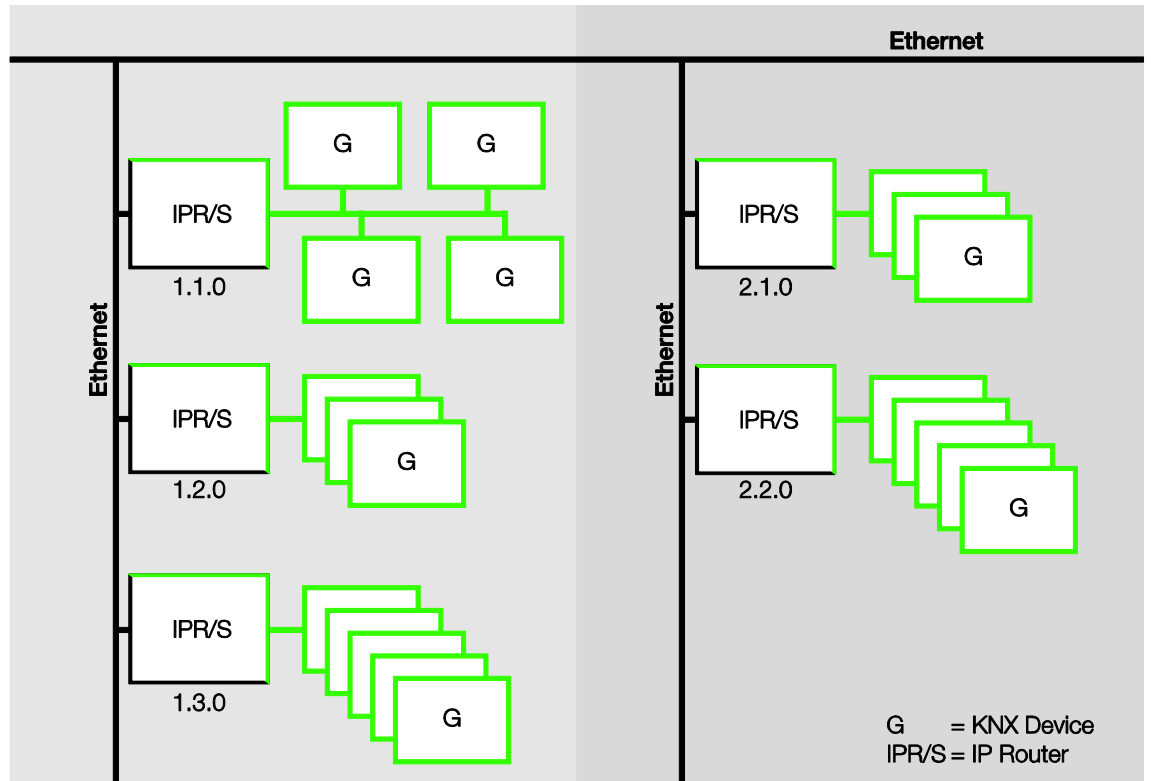


ABB i-bus® KNX

Planificación y uso

4.1.5 Topología mixta

Esto es posible si en una instalación KNX es necesario utilizar el router IP en un lugar como acoplador de zona (p. ej.: en el edificio de oficinas) y en otro lugar como acoplador de línea (p. ej.: en un garaje subterráneo alejado).

En este caso solo debe asegurarse de que el router IP como acoplador de línea utiliza la dirección de acoplador de línea de una zona libre, por ejemplo, aquí en la imagen 2.1.0.

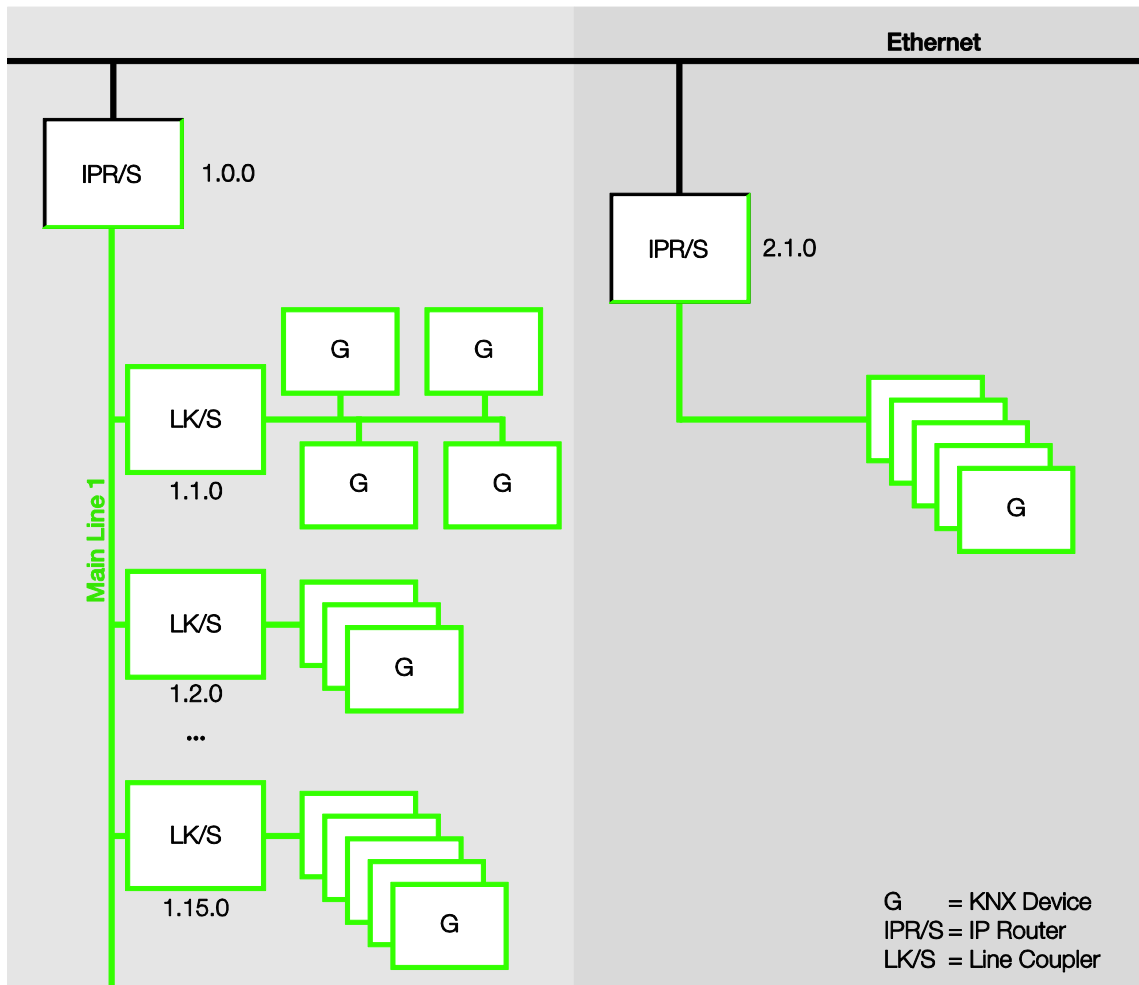




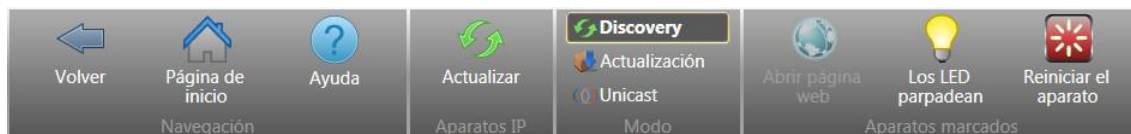
ABB i-bus® KNX Planificación y uso

4.2 La i-bus® Tool

La ABB i-bus® Tool es necesaria para ajustar ciertas funciones en los dispositivos IP de ABB. Facilita la puesta en marcha en la página IP.

Se accede a los ajustes IP a través de los botones *Conectar*  y *Dispositivos IP* .

Barra multifunción: cambiar entre Discovery, actualización de firmware y Unicast



Haga clic en el botón correspondiente para seleccionar el modo *Discovery*, *Actualización* o *Unicast*.

Discovery

Selecione en la barra multifunción el modo *Discovery*.

Esta función sirve para buscar y mostrar los dispositivos IP de ABB de la red.

Nota

Encontrará una descripción de las funciones en la ayuda online de la i-bus® Tool.

Actualizar firmware

Selecione en la barra multifunción el modo *Actualización*.

Si es necesario, con esta función se puede actualizar el firmware.

Importante

El firmware se deberá descargar de Internet previamente (www.abb.com/knx). Para ello la i-bus® Tool se conecta con un servidor **si existe conexión a Internet**.

En ese caso para la actualización de los dispositivos ya no será necesario disponer de conexión a Internet.

Importante

Durante el proceso de actualización, el bus KNX (TP) deberá estar conectado también a la red IP (LAN) para que los parámetros KNX puedan restablecerse correctamente. De lo contrario se producirá un fallo en el proceso de actualización.

Nota

Encontrará una descripción de las funciones en la ayuda online de la i-bus® Tool.

Nota

Para el proceso de actualización se debe ejecutar la i-bus® Tool como administrador.

ABB i-bus® KNX

Planificación y uso

Unicast

Seleccione en la barra multifunción el modo *Unicast*.

Esta función solo está disponible para el IPR/S3.1.1, si anteriormente se ha seleccionado en las aplicaciones ETS la opción *Unicast* para el parámetro *Tipo de comunicación IP*.

Encontrará más información sobre la parametrización en [Ventana de parámetros Tipo de comunicación IP \(Unicast\)](#), pág. 37. La configuración se lleva a cabo en la i-bus® Tool.

Nota
Encontrará una descripción de las funciones en la ayuda online de la i-bus® Tool.

ABB i-bus[®] KNX

Anexo

A Anexo

A.1 Información de pedido

Tipo de aparato	Nombre del producto	N.º de producto	bbn 40 16779 EAN	Peso 1 pza. [kg]	Ud. emb. [Pza.]
IPR/S 3.1.1	Router IP, MDRC	2CDG110175R0011	906 48 7	0,1	1

ABB i-bus® KNX

Third party software components, notices and OSS license texts

Third party software components, notices and OSS license texts

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Third party software components, notices and OSS license texts

Software components structured by applicable license:

This document contains Open Source Software (“OSS”) subject to OSS license terms as follows:

The software contains **open source software components** as follows:

under General Public Licence (GPL):

- buildroot (v2012-05)
- memstat (v0.8)

under General Public License (GPL) Version 2:

- abbpower (v1.0)
- at91ft12 (v1.0)
- at91gpbr (v1.0)
- buildroot (v2012-05)
- busybox (v1.20.1)
- gdbserver (v7.2.50.20100908-cvs)
- glibc (v2.11.1)
- kmod (v8)
- libgcc (v4.5.1)
- Linux (v3.2.26)
- mtd-utils (v1.4.9)
- U-Boot (v2010.09)
- udev (v058)
- util Linux (v2.20.1)

under General Public License (GPL) Version 3:

- binutils (v2.21)
- gdbserver (v7.2.50.20100908-cvs)
- gzip (v1.5)

ABB i-bus® KNX

Third party software components, notices and OSS license texts

- libgcc (v4.5.1)

- tar (v1.17)

- util Linux (v2.20.1)

under Library General Public License (LGPL) Version 2:

- binutils (v2.21)

- gdbserver (v7.2.50.20100908-cvs)

- glib (libglib2) (v2.30.2)

- util Linux (v2.20.1)

under Lesser General Public License (LGPL) Version 2.1:

- glibc (v2.11.1)

- libgcc (v4.5.1)

- libkmod (v8)

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- gmplib (v5.0.4)

- libgcc (v4.5.1)

- uclibc (v0.9.31.1)

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- popt (v1.16)

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- libgcc (v4.5.1)

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- AT91Bootstrap 1.9 (v1.9)

- dropbear sshd (v2012.55)

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- libpcap (v1.2.1)
- libxml2 (v2.7.8)
- Isof (v4.85)
- OpenSSL (v1.0.1g)
- Pcre (v8.30)
- util Linux (v2.20.1)
- zlib (v1.2.6)

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- expat (v2.1.0)

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Buildroot (v2012-05):

Buildroot is a simple, efficient and easy-to-use tool to generate embedded Linux systems through cross-compilation.

The documentation can be found in docs/manual. You can generate a text document with 'make manual-text' and read output/docs/manual/manual.text.

Online documentation can be found at <http://buildroot.org/docs.html>

To build and use the buildroot stuff, do the following:

- 1) run 'make menuconfig'
- 2) select the target architecture and the packages you wish to compile
- 3) run 'make'
- 4) wait while it compiles
- 5) find the kernel, bootloader, root filesystem, etc. in output/images

You do not need to be root to build or run buildroot. Have fun!

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Buildroot comes with a basic configuration for a number of boards. Run 'make list-defconfigs' to view the list of provided configurations.

Please feed suggestions, bug reports, insults, and bribes back to the buildroot mailing list: buildroot@buildroot.org

You can also find us on #buildroot on Freenode IRC.

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```

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```

```
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```

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```

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```

```
`Gnomovision' (which makes passes at compilers) written by James Hacker.
```

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<signature of Ty Coon>, 1 April 1989
```

```
Ty Coon, President of Vice
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Dropbear sshd (v2012.55):

Dropbear contains a number of components from different sources, hence there are a few licenses and authors involved. All licenses are fairly non-restrictive.

The majority of code is written by Matt Johnston, under the license below.

Portions of the client-mode work are (c) 2004 Mihnea Stoenescu, under the same license:

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=====

LibTomCrypt and LibTomMath are written by Tom St Denis, and are Public Domain.

=====

sshpty.c is taken from OpenSSH 3.5p1,

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software must be clearly marked as such, and if the derived work is
incompatible with the protocol description in the RFC file, it must be
called by a name other than "ssh" or "Secure Shell". "

=====

loginrec.c

loginrec.h

atomicio.h

atomicio.c

and strlcat() (included in util.c) are from OpenSSH 3.6.1p2, and are licensed
under the 2 point BSD license.

loginrec is written primarily by Andre Lucas, atomicio.c by Theo de Raadt.

strlcat() is (c) Todd C. Miller

=====

Import code in keyimport.c is modified from PuTTY's import.c, licensed as
follows:

PuTTY is copyright 1997-2003 Simon Tatham.

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Delchev, Andreas Schultz, Jeroen Massar, Wez Furlong, Nicolas Barry,

Justin Bradford, and CORE SDI S.A.

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Gdbserver (v7.2.50.20100908-cvs):

README for GNU development tools

This directory contains various GNU compilers, assemblers, linkers, debuggers, etc., plus their support routines, definitions, and documentation.

If you are receiving this as part of a GDB release, see the file gdb/README.

If with a binutils release, see binutils/README; if with a libg++ release, see libg++/README, etc. That'll give you info about this package -- supported targets, how to use it, how to report bugs, etc.

It is now possible to automatically configure and build a variety of tools with one command. To build all of the tools contained herein, run the ``configure" script here, e.g.:

```
./configure  
make
```

To install them (by default in /usr/local/bin, /usr/local/lib, etc),

then do:

```
make install
```

(If the configure script can't determine your type of computer, give it the name as an argument, for instance ``./configure sun4". You can use the script ``config.sub" to test whether a name is recognized; if it is, config.sub translates it to a triplet specifying CPU, vendor, and OS.)

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If you have more than one compiler on your system, it is often best to explicitly set `CC` in the environment before running `configure`, and to also set `CC` when running `make`. For example (assuming `sh/bash/ksh`):

```
CC=gcc ./configure  
  
make
```

A similar example using `csh`:

```
setenv CC gcc  
  
./configure  
  
make
```

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REPORTING BUGS: Again, see `gdb/README`, `binutils/README`, etc., for info on where and how to report problems.

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Glib (v2.30.2):

General Information

=====

This is GLib version 2.30.2. GLib is the low-level core library that forms the basis for projects such as GTK+ and GNOME. It provides data structure handling for C, portability wrappers, and interfaces for such runtime functionality as an event loop, threads, dynamic loading, and an object system.

The official ftp site is:

<ftp://ftp.gtk.org/pub/glib>

The official web site is:

<http://www.gtk.org/>

Information about mailing lists can be found at

<http://www.gtk.org/mailling-lists.html>

To subscribe: mail -s subscribe gtk-list-request@gnome.org < /dev/null

(Send mail to gtk-list-request@gnome.org with the subject "subscribe")

Installation

=====

See the file 'INSTALL'

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Notes about GLib 2.30

=====

* GObject includes a generic marshaller, `g_cclosure_marshal_generic`.

To use it, simply specify NULL as the marshaller in `g_signal_new()`.

The generic marshaller is implemented with libffi, and consequently

GObject depends on libffi now.

Notes about GLib 2.28

=====

* The GApplication API has changed compared to the version that was included in the 2.25 development snapshots. Existing users will need adjustments.

Notes about GLib 2.26

=====

* Nothing noteworthy.

Notes about GLib 2.24

=====

* It is now allowed to call `g_thread_init(NULL)` multiple times, and to call glib functions before `g_thread_init(NULL)` is called (although the later is mainly a change in docs as this worked before too). See the GThread reference documentation for the details.

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* GObject now links to GThread and threads are enabled automatically

when `g_type_init()` is called.

* GObject no longer allows to call `g_object_set()` on construct-only properties

while an object is being initialized. If this behavior is needed, setting a custom constructor that just chains up will re-enable this functionality.

* `GMappedFile` on an empty file now returns `NULL` for the contents instead of

returning an empty string. The documentation specifically states that code may not rely on nul-termination here so any breakage caused by this change is a bug in application code.

Notes about GLib 2.22

=====

* Repeated calls to `g_simple_async_result_set_op_res_gpointer` used

to leak the data. This has been fixed to always call the provided `destroy_notify`.

Notes about GLib 2.20

=====

* The functions for launching applications (e.g. `g_app_info_launch()` +

friends) now passes a FUSE `file://` URI if possible (requires `gvfs` with the FUSE daemon to be running and operational). With `gvfs 2.26`, FUSE `file://` URIs will be mapped back to `gio` URIs in the `GFile`

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constructors. The intent of this change is to better integrate POSIX-only applications, see bug #528670 for the rationale. The only user-visible change is when an application needs to examine an URI passed to it (e.g. as a positional parameter). Instead of looking at the given URI, the application will now need to look at the result of `g_file_get_uri()` after having constructed a `GFile` object with the given URI.

Notes about GLib 2.18

=====

* The recommended way of using GLib has always been to only include the toplevel headers `glib.h`, `glib-object.h` and `gio.h`. GLib enforces this by generating an error when individual headers are directly included. To help with the transition, the enforcement is not turned on by default for GLib headers (it is turned on for `GObject` and `GIO`). To turn it on, define the preprocessor symbol `G_DISABLE_SINGLE_INCLUDES`.

Notes about GLib 2.16

=====

* GLib now includes `GIO`, which adds optional dependencies against `libattr` and `libselenium` for extended attribute and SELinux support. Use `--disable-xattr` and `--disable-selinux` to build without these.

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Notes about GLib 2.10

=====

- * The functions `g_snprintf()` and `g_vsnprintf()` have been removed from the `gprintf.h` header, since they are already declared in `glib.h`. This doesn't break documented use of `gprintf.h`, but people have been known to include `gprintf.h` without including `glib.h`.

- * The Unicode support has been updated to Unicode 4.1. This adds several new members to the `GUnicodeBreakType` enumeration.

- * The support for Solaris threads has been retired. Solaris has provided POSIX threads for long enough now to have them available on every Solaris platform.

- * 'make check' has been changed to validate translations by calling `msgfmt` with the `-c` option. As a result, it may fail on systems with older `gettext` implementations (GNU `gettext` < 0.14.1, or Solaris `gettext`). 'make check' will also fail on systems where the C compiler does not support ELF visibility attributes.

- * The `GMemChunk` API has been deprecated in favour of a new 'slice allocator'. See the `g_slice` documentation for more details.

- * A new type, `GInitiallyUnowned`, has been introduced, which is intended to serve as a common implementation of the 'floating reference' concept that is e.g. used by `GtkObject`. Note that changing the

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inheritance hierarchy of a type can cause problems for language bindings and other code which needs to work closely with the type system. Therefore, switching to GInitiallyUnowned should be done carefully. `g_object_compat_control()` has been added to GLib 2.8.5 to help with the transition.

Notes about GLib 2.6.0

=====

* GLib 2.6 introduces the concept of 'GLib filename encoding', which is the on-disk encoding on Unix, but UTF-8 on Windows. All GLib functions returning or accepting pathnames have been changed to expect filenames in this encoding, and the common POSIX functions dealing with pathnames have been wrapped. These wrappers are declared in the header `<glib/gstdio.h>` which must be included explicitly; it is not included through `<glib.h>`.

On current (NT-based) Windows versions, where the on-disk file names are Unicode, these wrappers use the wide-character API in the C library. Thus applications can handle file names containing any Unicode characters through GLib's own API and its POSIX wrappers, not just file names restricted to characters in the system codepage.

To keep binary compatibility with applications compiled against older versions of GLib, the Windows DLL still provides entry points with the old semantics using the old names, and applications compiled against GLib 2.6 will actually use new names for the

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functions. This is transparent to the programmer.

When compiling against GLib 2.6, applications intended to be portable to Windows must take the UTF-8 file name encoding into consideration, and use the `gstdio` wrappers to access files whose names have been constructed from strings returned from GLib.

* Likewise, `g_get_user_name()` and `g_get_real_name()` have been changed to return UTF-8 on Windows, while keeping the old semantics for applications compiled against older versions of GLib.

* The GLib uses an `'_'` prefix to indicate private symbols that must not be used by applications. On some platforms, symbols beginning with prefixes such as `_g` will be exported from the library, on others not. In no case can applications use these private symbols. In addition to that, GLib+ 2.6 makes several symbols private which were not in any installed header files and were never intended to be exported.

* To reduce code size and improve efficiency, GLib, when compiled with the GNU toolchain, has separate internal and external entry points for exported functions. The internal names, which begin with `IA__`, may be seen when debugging a GLib program.

* On Windows, GLib no longer opens a console window when printing warning messages if `stdout` or `stderr` are invalid, as they are in "Windows subsystem" (GUI) applications. Simply redirect `stdout` or `stderr` if you need to see them.

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* The child watch functionality tends to reveal a bug in many thread implementations (in particular the older LinuxThreads implementation on Linux) where it's not possible to call `waitpid()` for a child created in a different thread. For this reason, for maximum portability, you should structure your code to fork all child processes that you want to wait for from the main thread.

* A problem was recently discovered with `g_signal_connect_object()`; it doesn't actually disconnect the signal handler once the object being connected to dies, just disables it. See the API docs for the function for further details and the correct workaround that will continue to work with future versions of GLib.

How to report bugs

=====

Bugs should be reported to the GNOME bug tracking system.

(<http://bugzilla.gnome.org>, product glib.) You will need to create an account for yourself.

In the bug report please include:

* Information about your system. For instance:

- What operating system and version
- For Linux, what version of the C library

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And anything else you think is relevant.

* How to reproduce the bug.

If you can reproduce it with one of the test programs that are built in the tests/ subdirectory, that will be most convenient. Otherwise, please include a short test program that exhibits the behavior.

As a last resort, you can also provide a pointer to a larger piece of software that can be downloaded.

* If the bug was a crash, the exact text that was printed out when the crash occurred.

* Further information such as stack traces may be useful, but is not necessary.

Patches

=====

Patches should also be submitted to bugzilla.gnome.org. If the patch fixes an existing bug, add the patch as an attachment to that bug report.

Otherwise, enter a new bug report that describes the patch, and attach the patch to that bug report.

Patches should be in unified diff form. (The `-up` option to `GNUdiff`.)

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Gzip (v1.5):

This is the file README for the gzip distribution.

The GNU gzip home page is <http://www.gnu.org/software/gzip>.

gzip (GNU zip) is a compression utility designed to be a replacement for 'compress'. Its main advantages over compress are much better compression and freedom from patented algorithms. The GNU Project uses it as the standard compression program for its system.

gzip currently uses by default the LZ77 algorithm used in zip 1.9 (the portable pzip compatible archiver). The gzip format was however designed to accommodate several compression algorithms. See below for a comparison of zip and gzip.

gunzip can currently decompress files created by gzip, compress or pack. The detection of the input format is automatic. For the gzip format, gunzip checks a 32 bit CRC. For pack, gunzip checks the uncompressed length. The 'compress' format was not designed to allow consistency checks. However gunzip is sometimes able to detect a bad .Z file because there is some redundancy in the .Z compression format. If you get an error when uncompressing a .Z file, do not assume that the .Z file is correct simply because the standard uncompress does not complain. This generally means that the standard uncompress does not check its input, and happily generates garbage output.

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gzip produces files with a .gz extension. Previous versions of gzip used the .z extension, which was already used by the 'pack' Huffman encoder. gunzip is able to decompress .z files (packed or gzip'ed).

Several planned features are not yet supported (see the file TODO).

See the file NEWS for a summary of changes since the last release.

See the file INSTALL for installation instructions.

WARNING: gzip is sensitive to compiler bugs, particularly when optimizing. Use "make check" to check that gzip was compiled correctly. Try compiling gzip without any optimization if you have a problem.

Please send all comments and bug reports by electronic mail to

<bug-gzip@gnu.org>.

Bug reports should ideally include:

- * The complete output of "gzip -V" (or the contents of revision.h if you can't get gzip to compile)
- * The hardware and operating system (try "uname -a")
- * The compiler used to compile (if it is gcc, use "gcc -v")
- * A description of the bug behavior
- * The input to gzip, that triggered the bug

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If you send me patches for machines I don't have access to, please test them very carefully. gzip is used for backups, it must be extremely reliable.

The znew and gzexe shell scripts provided with gzip benefit from (but do not require) the (non-GNU) cpmmod utility to transfer file attributes.

The sample programs zread.c, sub.c and add.c in subdirectory sample are provided as examples of useful complements to gzip. Read the comments inside each source file. The perl script ztouch is also provided as example (not installed by default since it relies on perl).

gzip is free software, you can redistribute it and/or modify it under the terms of the GNU General Public License, a copy of which is provided under the name COPYING. The latest version of gzip are always available from <ftp://ftp.gnu.org/gnu/gzip> or in any of the gnu mirror sites.

- sources in gzip-*.tar (or .shar or .tar.gz).
- MSDOS lha self-extracting exe in gzip-msdos-*.exe. Once extracted, copy gzip.exe to gunzip.exe and zcat.exe, or use "gzip -d" to decompress. gzip386.exe runs much faster but only on 386 and above; it was compiled with djgpp 1.10 available in directory omnigate.clarkson.edu/pub/msdos/djgpp.

A VMS executable is in [ftp://ftp.spc.edu/\[.macro32.savesets\]gzip-1-*.zip](ftp://ftp.spc.edu/[.macro32.savesets]gzip-1-*.zip) (use [.macro32]unzip.exe to extract). A PRIMOS executable is available in <ftp://ftp.lysator.liu.se/pub/primos/run/gzip.run>.

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Some ftp servers can automatically make a tar.Z from a tar file. If you are getting gzip for the first time, you can ask for a tar.Z file instead of the much larger tar file.

Many thanks to those who provided me with bug reports and feedback. See the files THANKS and ChangeLog for more details.

Note about zip vs. gzip:

The name 'gzip' was a very unfortunate choice, because zip and gzip are two really different programs, although the actual compression and decompression sources were written by the same persons. A different name should have been used for gzip, but it is too late to change now.

zip is an archiver: it compresses several files into a single archive file. gzip is a simple compressor: each file is compressed separately. Both share the same compression and decompression code for the 'deflate' method. unzip can also decompress old zip archives (implode, shrink and reduce methods). gunzip can also decompress files created by compress and pack. zip 1.9 and gzip do not support compression methods other than deflation. (zip 1.0 supports shrink and implode). Better compression methods may be added in future versions of gzip. zip will always stick to absolute compatibility with pkzip, it is thus constrained by PKWare, which is a commercial company. The gzip header format is deliberately different from that of pkzip to avoid such a constraint.

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On Unix, gzip is mostly useful in combination with tar. GNU tar 1.11.2 and later has a -z option to invoke gzip automatically. "tar -z" compresses better than zip, since gzip can then take advantage of redundancy between distinct files. The drawback is that you must scan the whole tar.gz file in order to extract a single file near the end; unzip can directly seek to the end of the zip file. There is no overhead when you extract the whole archive anyway. If a member of a .zip archive is damaged, other files can still be recovered. If a .tar.gz file is damaged, files beyond the failure point cannot be recovered. (Future versions of gzip will have error recovery features.)

gzip and gunzip are distributed as a single program. zip and unzip are, for historical reasons, two separate programs, although the authors of these two programs work closely together in the Info-ZIP team. zip and unzip are not associated with the GNU project. See <http://info-zip.org/> for more about zip and unzip.

For any copyright year range specified as YYYY-ZZZZ in this package note that the range specifies every single year in that closed interval.

=====

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Kmod (v8):

kmod - Linux kernel module handling

OVERVIEW

=====

kmod is a set of tools to handle common tasks with Linux kernel modules like
insert, remove, list, check properties, resolve dependencies and aliases.

These tools are designed on top of libkmod, a library that is shipped with
kmod. See libkmod/README for more details on this library and how to use it.

The aim is to be compatible with tools, configurations and indexes from
module-init-tools project.

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Compilation and installation

=====

In order to compile the source code you need following software packages:

- GCC compiler
- GNU C library

Optional dependencies:

- ZLIB library
- LZMA library

Typical configuration:

```
./configure CFLAGS="-g -O2" --prefix=/usr \  
--sysconfdir=/etc --libdir=/usr/lib
```

Configure automatically searches for all required components and packages.

To compile and install run:

```
make && make install
```

Hacking

=====

Run 'bootstrap' script before configure. If you want to accept the recommended flags, you just need to run 'bootstrap-configure'.

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Make sure to read the CODING-STYLE file and the other READMEs: libkmod/README
and testsuite/README.

Information

=====

Signed packages:

<http://www.kernel.org/pub/linux/utils/kernel/kmod/>

Mailing list:

linux-modules@vger.kernel.org

Git:

<git://git.kernel.org/pub/scm/utils/kernel/kmod/kmod.git>

<http://git.kernel.org/pub/scm/utils/kernel/kmod/kmod.git>

<https://git.kernel.org/pub/scm/utils/kernel/kmod/kmod.git>

Gitweb:

<http://git.kernel.org/?p=utils/kernel/kmod/kmod.git>

Irc:

#kmod on irc.freenode.org

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Libffi (3.0.11):

Status

=====

libffi-3.0.11 was released on April 11, 2012. Check the libffi web page for updates: <URL:<http://sourceware.org/libffi/>>.

What is libffi?

=====

Compilers for high level languages generate code that follow certain conventions. These conventions are necessary, in part, for separate compilation to work. One such convention is the "calling convention". The "calling convention" is essentially a set of assumptions made by the compiler about where function arguments will be found on entry to a function. A "calling convention" also specifies where the return value for a function is found.

Some programs may not know at the time of compilation what arguments are to be passed to a function. For instance, an interpreter may be told at run-time about the number and types of arguments used to call a given function. Libffi can be used in such programs to provide a bridge from the interpreter program to compiled code.

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The libffi library provides a portable, high level programming interface to various calling conventions. This allows a programmer to call any function specified by a call interface description at run time.

FFI stands for Foreign Function Interface. A foreign function interface is the popular name for the interface that allows code written in one language to call code written in another language. The libffi library really only provides the lowest, machine dependent layer of a fully featured foreign function interface. A layer must exist above libffi that handles type conversions for values passed between the two languages.

Supported Platforms

=====

Libffi has been ported to many different platforms.

For specific configuration details and testing status, please refer to the wiki page here:

http://www.moxielogic.org/wiki/index.php?title=Libffi_3.0.11

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At the time of release, the following basic configurations have been

tested:

-----+-----		
Architecture	Operating System	
-----+-----		
Alpha	Linux	
Alpha	Tru64	
ARM	Linux	
ARM	iOS	
AVR32	Linux	
HPPA	HPUX	
IA-64	Linux	
M68K	FreeMiNT	
M68K	RTEMS	
MIPS	IRIX	
MIPS	Linux	
MIPS	RTEMS	
MIPS64	Linux	
PowerPC	AMIGA	
PowerPC	Linux	
PowerPC	Mac OSX	
PowerPC	FreeBSD	
PowerPC64	Linux	
S390	Linux	
S390X	Linux	
SPARC	Linux	

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| SPARC | Solaris |

| SPARC64 | Linux |

| SPARC64 | FreeBSD |

| X86 | FreeBSD |

| X86 | Interix |

| X86 | kFreeBSD |

| X86 | Linux |

| X86 | Mac OSX |

| X86 | OpenBSD |

| X86 | OS/2 |

| X86 | Solaris |

| X86 | Windows/Cygwin |

| X86 | Windows/MingW |

| X86-64 | FreeBSD |

| X86-64 | Linux |

| X86-64 | Linux/x32 |

| X86-64 | OpenBSD |

| X86-64 | Windows/MingW |

|-----+-----|

Please send additional platform test results to

libffi-discuss@sourceware.org and feel free to update the wiki page

above.

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Installing libffi

=====

First you must configure the distribution for your particular system. Go to the directory you wish to build libffi in and run the "configure" program found in the root directory of the libffi source distribution.

You may want to tell configure where to install the libffi library and header files. To do that, use the `--prefix` configure switch. Libffi will install under `/usr/local` by default.

If you want to enable extra run-time debugging checks use the `--enable-debug` configure switch. This is useful when your program dies mysteriously while using libffi.

Another useful configure switch is `--enable-purify-safety`. Using this will add some extra code which will suppress certain warnings when you are using Purify with libffi. Only use this switch when using Purify, as it will slow down the library.

It's also possible to build libffi on Windows platforms with Microsoft's Visual C++ compiler. In this case, use the `msvcc.sh` wrapper script during configuration like so:

```
path/to/configure CC=path/to/msvcc.sh LD=link CPP=\"cl -nologo -EP\"
```

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For 64-bit Windows builds, use `CC="path/to/msvcc.sh -m64"`.

You may also need to specify `--build` appropriately. When building with MSVC under a MingW environment, you may need to remove the line in `configure` that sets `'fix_srcfile_path'` to a `'cygpath'` command. (`'cygpath'` is not present in MingW, and is not required when using MingW-style paths.)

For iOS builds, run `generate-ios-source-and-headers.py` and then `libffi.xcodeproj` should work.

`configure` has many other options. Use `"configure --help"` to see them all.

Once `configure` has finished, type `"make"`. Note that you must be using GNU make. You can ftp GNU make from `prep.ai.mit.edu:/pub/gnu`.

To ensure that `libffi` is working as advertised, type `"make check"`.

This will require that you have DejaGNU installed.

To install the library and header files, type `"make install"`.

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History

=====

See the ChangeLog files for details.

3.0.11 Apr-11-12

Add support for variadic functions (ffi_prep_cif_var).

Add Linux/x32 support.

Add thiscall, fastcall and MSVC cdecl support on Windows.

Add Amiga and newer MacOS support.

Add m68k FreeMiNT support.

Integration with iOS' xcode build tools.

Fix Octeon and MC68881 support.

Fix code pessimizations.

Lots of build fixes.

3.0.10 Aug-23-11

Add support for Apple's iOS.

Add support for ARM VFP ABI.

Add RTEMS support for MIPS and M68K.

Fix instruction cache clearing problems on

ARM and SPARC.

Fix the N64 build on mips-sgi-irix6.5.

Enable builds with Microsoft's compiler.

Enable x86 builds with Oracle's Solaris compiler.

Fix support for calling code compiled with Oracle's Sparc

Solaris compiler.

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Testsuite fixes for Tru64 Unix.

Additional platform support.

3.0.9 Dec-31-09

Add AVR32 and win64 ports. Add ARM softfp support.

Many fixes for AIX, Solaris, HP-UX, *BSD.

Several PowerPC and x86-64 bug fixes.

Build DLL for windows.

3.0.8 Dec-19-08

Add *BSD, BeOS, and PA-Linux support.

3.0.7 Nov-11-08

Fix for ppc FreeBSD.

(thanks to Andreas Tobler)

3.0.6 Jul-17-08

Fix for closures on sh.

Mark the sh/sh64 stack as non-executable.

(both thanks to Kaz Kojima)

3.0.5 Apr-3-08

Fix libffi.pc file.

Fix #define ARM for IcedTea users.

Fix x86 closure bug.

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3.0.4 Feb-24-08

Fix x86 OpenBSD configury.

3.0.3 Feb-22-08

Enable x86 OpenBSD thanks to Thomas Heller, and

x86-64 FreeBSD thanks to Björn König and Andreas Tobler.

Clean up test instruction in README.

3.0.2 Feb-21-08

Improved x86 FreeBSD support.

Thanks to Björn König.

3.0.1 Feb-15-08

Fix instruction cache flushing bug on MIPS.

Thanks to David Daney.

3.0.0 Feb-15-08

Many changes, mostly thanks to the GCC project.

Cygnus Solutions is now Red Hat.

[10 years go by...]

1.20 Oct-5-98

Raffaele Sena produces ARM port.

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1.19 Oct-5-98

Fixed x86 long double and long long return support.

m68k bug fixes from Andreas Schwab.

Patch for DU assembler compatibility for the Alpha from Richard

Henderson.

1.18 Apr-17-98

Bug fixes and MIPS configuration changes.

1.17 Feb-24-98

Bug fixes and m68k port from Andreas Schwab. PowerPC port from

Geoffrey Keating. Various bug x86, Sparc and MIPS bug fixes.

1.16 Feb-11-98

Richard Henderson produces Alpha port.

1.15 Dec-4-97

Fixed an n32 ABI bug. New libtool, auto* support.

1.14 May-13-97

libtool is now used to generate shared and static libraries.

Fixed a minor portability problem reported by Russ McManus

<mcmanr@eq.gs.com>.

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1.13 Dec-2-96

Added --enable-purify-safety to keep Purify from complaining about certain low level code.

Sparc fix for calling functions with < 6 args.

Linux x86 a.out fix.

1.12 Nov-22-96

Added missing ffi_type_void, needed for supporting void return types. Fixed test case for non MIPS machines. Cygnus Support is now Cygnus Solutions.

1.11 Oct-30-96

Added notes about GNU make.

1.10 Oct-29-96

Added configuration fix for non GNU compilers.

1.09 Oct-29-96

Added --enable-debug configure switch. Clean-ups based on LCLint feedback. ffi_mips.h is always installed. Many configuration fixes. Fixed ffitest.c for sparc builds.

1.08 Oct-15-96

Fixed n32 problem. Many clean-ups.

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1.07 Oct-14-96

Gordon Irlam rewrites v8.S again. Bug fixes.

1.06 Oct-14-96

Gordon Irlam improved the sparc port.

1.05 Oct-14-96

Interface changes based on feedback.

1.04 Oct-11-96

Sparc port complete (modulo struct passing bug).

1.03 Oct-10-96

Passing struct args, and returning struct values works for
all architectures/calling conventions. Expanded tests.

1.02 Oct-9-96

Added SGI n32 support. Fixed bugs in both o32 and Linux support.

Added "make test".

1.01 Oct-8-96

Fixed float passing bug in mips version. Restructured some
of the code. Builds cleanly with SGI tools.

1.00 Oct-7-96

First release. No public announcement.

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Authors & Credits

=====

libffi was originally written by Anthony Green <green@moxielogic.com>.

The developers of the GNU Compiler Collection project have made innumerable valuable contributions. See the ChangeLog file for details.

Some of the ideas behind libffi were inspired by Gianni Mariani's free gencall library for Silicon Graphics machines.

The closure mechanism was designed and implemented by Kresten Krab Thorup.

Major processor architecture ports were contributed by the following developers:

alpha	Richard Henderson
arm	Raffaele Sena
cris	Simon Posnjak, Hans-Peter Nilsson
frv	Anthony Green
ia64	Hans Boehm
m32r	Kazuhiro Inaoka
m68k	Andreas Schwab
mips	Anthony Green, Casey Marshall

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mips64	David Daney
pa	Randolph Chung, Dave Anglin, Andreas Tobler
powerpc	Geoffrey Keating, Andreas Tobler, David Edelsohn, John Hornkvist
powerpc64	Jakub Jelinek
s390	Gerhard Tonn, Ulrich Weigand
sh	Kaz Kojima
sh64	Kaz Kojima
sparc	Anthony Green, Gordon Irlam
x86	Anthony Green, Jon Beniston
x86-64	Bo Thorsen

Jesper Skov and Andrew Haley both did more than their fair share of stepping through the code and tracking down bugs.

Thanks also to Tom Tromey for bug fixes, documentation and configuration help.

Thanks to Jim Blandy, who provided some useful feedback on the libffi interface.

Andreas Tobler has done a tremendous amount of work on the testsuite.

Alex Oliva solved the executable page problem for SELinux.

The list above is almost certainly incomplete and inaccurate. I'm happy to make corrections or additions upon request.

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If you have a problem, or have found a bug, please send a note to the author at green@moxielogic.com, or the project mailing list at libffi-discuss@sourceware.org.

Libjpeg (v9a):

The Independent JPEG Group's JPEG software

=====

README for release 8d of 15-Jan-2012

=====

This distribution contains the eighth public release of the Independent JPEG Group's free JPEG software. You are welcome to redistribute this software and to use it for any purpose, subject to the conditions under LEGAL ISSUES, below.

This software is the work of Tom Lane, Guido Vollbeding, Philip Gladstone, Bill Allombert, Jim Boucher, Lee Crocker, Bob Friesenhahn, Ben Jackson, Julian Minguillon, Luis Ortiz, George Phillips, Davide Rossi, Ge' Weijers, and other members of the Independent JPEG Group.

IJG is not affiliated with the ISO/IEC JTC1/SC29/WG1 standards committee (also known as JPEG, together with ITU-T SG16).

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DOCUMENTATION ROADMAP

=====

This file contains the following sections:

- OVERVIEW General description of JPEG and the IJG software.
- LEGAL ISSUES Copyright, lack of warranty, terms of distribution.
- REFERENCES Where to learn more about JPEG.
- ARCHIVE LOCATIONS Where to find newer versions of this software.
- ACKNOWLEDGMENTS Special thanks.
- FILE FORMAT WARS Software *not* to get.
- TO DO Plans for future IJG releases.

Other documentation files in the distribution are:

User documentation:

- install.txt How to configure and install the IJG software.
- usage.txt Usage instructions for cjpeg, djpeg, jpegtran,
rdjpgcom, and wrjpgcom.
- *.1 Unix-style man pages for programs (same info as usage.txt).
- wizard.txt Advanced usage instructions for JPEG wizards only.
- change.log Version-to-version change highlights.

Programmer and internal documentation:

- libjpeg.txt How to use the JPEG library in your own programs.
- example.c Sample code for calling the JPEG library.
- structure.txt Overview of the JPEG library's internal structure.
- filelist.txt Road map of IJG files.
- coderrules.txt Coding style rules --- please read if you contribute code.

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Please read at least the files `install.txt` and `usage.txt`. Some information can also be found in the JPEG FAQ (Frequently Asked Questions) article. See ARCHIVE LOCATIONS below to find out where to obtain the FAQ article.

If you want to understand how the JPEG code works, we suggest reading one or more of the REFERENCES, then looking at the documentation files (in roughly the order listed) before diving into the code.

OVERVIEW

=====

This package contains C software to implement JPEG image encoding, decoding, and transcoding. JPEG (pronounced "jay-peg") is a standardized compression method for full-color and gray-scale images.

This software implements JPEG baseline, extended-sequential, and progressive compression processes. Provision is made for supporting all variants of these processes, although some uncommon parameter settings aren't implemented yet.

We have made no provision for supporting the hierarchical or lossless processes defined in the standard.

We provide a set of library routines for reading and writing JPEG image files, plus two sample applications "cjpeg" and "djpeg", which use the library to perform conversion between JPEG and some other popular image file formats.

The library is intended to be reused in other applications.

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In order to support file conversion and viewing software, we have included considerable functionality beyond the bare JPEG coding/decoding capability; for example, the color quantization modules are not strictly part of JPEG decoding, but they are essential for output to colormapped file formats or colormapped displays. These extra functions can be compiled out of the library if not required for a particular application.

We have also included "jpegtran", a utility for lossless transcoding between different JPEG processes, and "rdjpgcom" and "wrjpgcom", two simple applications for inserting and extracting textual comments in JFIF files.

The emphasis in designing this software has been on achieving portability and flexibility, while also making it fast enough to be useful. In particular, the software is not intended to be read as a tutorial on JPEG. (See the REFERENCES section for introductory material.) Rather, it is intended to be reliable, portable, industrial-strength code. We do not claim to have achieved that goal in every aspect of the software, but we strive for it.

We welcome the use of this software as a component of commercial products. No royalty is required, but we do ask for an acknowledgement in product documentation, as described under LEGAL ISSUES.

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LEGAL ISSUES

=====

In plain English:

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3. You may not pretend that you wrote this software. If you use it in a program, you must acknowledge somewhere in your documentation that you've used the IJG code.

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(3) Permission for use of this software is granted only if the user accepts full responsibility for any undesirable consequences; the authors accept NO LIABILITY for damages of any kind.

These conditions apply to any software derived from or based on the IJG code, not just to the unmodified library. If you use our work, you ought to acknowledge us.

Permission is NOT granted for the use of any IJG author's name or company name in advertising or publicity relating to this software or products derived from it. This software may be referred to only as "the Independent JPEG Group's software".

We specifically permit and encourage the use of this software as the basis of commercial products, provided that all warranty or liability claims are assumed by the product vendor.

ansi2knr.c is included in this distribution by permission of L. Peter Deutsch, sole proprietor of its copyright holder, Aladdin Enterprises of Menlo Park, CA. ansi2knr.c is NOT covered by the above copyright and conditions, but instead by the usual distribution terms of the Free Software Foundation; principally,

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that you must include source code if you redistribute it. (See the file `ansi2knr.c` for full details.) However, since `ansi2knr.c` is not needed as part of any program generated from the IJG code, this does not limit you more than the foregoing paragraphs do.

The Unix configuration script "configure" was produced with GNU Autoconf. It is copyright by the Free Software Foundation but is freely distributable. The same holds for its supporting scripts (`config.guess`, `config.sub`, `ltmain.sh`). Another support script, `install-sh`, is copyright by X Consortium but is also freely distributable.

The IJG distribution formerly included code to read and write GIF files. To avoid entanglement with the Unisys LZW patent, GIF reading support has been removed altogether, and the GIF writer has been simplified to produce "uncompressed GIFs". This technique does not use the LZW algorithm; the resulting GIF files are larger than usual, but are readable by all standard GIF decoders.

We are required to state that

"The Graphics Interchange Format(c) is the Copyright property of CompuServe Incorporated. GIF(sm) is a Service Mark property of CompuServe Incorporated."

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REFERENCES

=====

We recommend reading one or more of these references before trying to understand the innards of the JPEG software.

The best short technical introduction to the JPEG compression algorithm is

Wallace, Gregory K. "The JPEG Still Picture Compression Standard",
Communications of the ACM, April 1991 (vol. 34 no. 4), pp. 30-44.

(Adjacent articles in that issue discuss MPEG motion picture compression, applications of JPEG, and related topics.) If you don't have the CACM issue handy, a PostScript file containing a revised version of Wallace's article is available at <http://www.iijg.org/files/wallace.ps.gz>. The file (actually a preprint for an article that appeared in IEEE Trans. Consumer Electronics) omits the sample images that appeared in CACM, but it includes corrections and some added material. Note: the Wallace article is copyright ACM and IEEE, and it may not be used for commercial purposes.

A somewhat less technical, more leisurely introduction to JPEG can be found in "The Data Compression Book" by Mark Nelson and Jean-loup Gailly, published by M&T Books (New York), 2nd ed. 1996, ISBN 1-55851-434-1. This book provides good explanations and example C code for a multitude of compression methods including JPEG. It is an excellent source if you are comfortable reading C code but don't know much about data compression in general. The book's JPEG sample code is far from industrial-strength, but when you are ready to look at a full implementation, you've got one here...

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The best currently available description of JPEG is the textbook "JPEG Still Image Data Compression Standard" by William B. Pennebaker and Joan L. Mitchell, published by Van Nostrand Reinhold, 1993, ISBN 0-442-01272-1. Price US\$59.95, 638 pp. The book includes the complete text of the ISO JPEG standards (DIS 10918-1 and draft DIS 10918-2).

Although this is by far the most detailed and comprehensive exposition of JPEG publicly available, we point out that it is still missing an explanation of the most essential properties and algorithms of the underlying DCT technology.

If you think that you know about DCT-based JPEG after reading this book, then you are in delusion. The real fundamentals and corresponding potential of DCT-based JPEG are not publicly known so far, and that is the reason for all the mistaken developments taking place in the image coding domain.

The original JPEG standard is divided into two parts, Part 1 being the actual specification, while Part 2 covers compliance testing methods. Part 1 is titled "Digital Compression and Coding of Continuous-tone Still Images, Part 1: Requirements and guidelines" and has document numbers ISO/IEC IS 10918-1, ITU-T T.81. Part 2 is titled "Digital Compression and Coding of Continuous-tone Still Images, Part 2: Compliance testing" and has document numbers ISO/IEC IS 10918-2, ITU-T T.83.

IJG JPEG 8 introduces an implementation of the JPEG SmartScale extension which is specified in two documents: A contributed document at ITU and ISO with title "ITU-T JPEG-Plus Proposal for Extending ITU-T T.81 for Advanced Image Coding", April 2006, Geneva, Switzerland. The latest version of this document is Revision 3. And a contributed document ISO/IEC JTC1/SC29/WG1 N 5799 with title "Evolution of JPEG", June/July 2011, Berlin, Germany.

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The JPEG standard does not specify all details of an interchangeable file format. For the omitted details we follow the "JFIF" conventions, revision 1.02. JFIF 1.02 has been adopted as an Ecma International Technical Report and thus received a formal publication status. It is available as a free download in PDF format from

<http://www.ecma-international.org/publications/techreports/E-TR-098.htm>.

A PostScript version of the JFIF document is available at

<http://www.ijg.org/files/jfif.ps.gz>. There is also a plain text version at

<http://www.ijg.org/files/jfif.txt.gz>, but it is missing the figures.

The TIFF 6.0 file format specification can be obtained by FTP from

<ftp://ftp.sgi.com/graphics/tiff/TIFF6.ps.gz>. The JPEG incorporation scheme

found in the TIFF 6.0 spec of 3-June-92 has a number of serious problems.

IJG does not recommend use of the TIFF 6.0 design (TIFF Compression tag 6).

Instead, we recommend the JPEG design proposed by TIFF Technical Note #2

(Compression tag 7). Copies of this Note can be obtained from

<http://www.ijg.org/files/>. It is expected that the next revision

of the TIFF spec will replace the 6.0 JPEG design with the Note's design.

Although IJG's own code does not support TIFF/JPEG, the free libtiff library

uses our library to implement TIFF/JPEG per the Note.

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ARCHIVE LOCATIONS

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The "official" archive site for this software is www.ijg.org.

The most recent released version can always be found there in

directory "files". This particular version will be archived as

<http://www.ijg.org/files/jpegsrc.v8d.tar.gz>, and in Windows-compatible

"zip" archive format as <http://www.ijg.org/files/jpegsr8d.zip>.

The JPEG FAQ (Frequently Asked Questions) article is a source of some
general information about JPEG.

It is available on the World Wide Web at <http://www.faqs.org/faqs/jpeg-faq/>

and other news.answers archive sites, including the official news.answers

archive at [rtfm.mit.edu](ftp://rtfm.mit.edu/pub/usenet/news.answers/jpeg-faq/): <ftp://rtfm.mit.edu/pub/usenet/news.answers/jpeg-faq/>.

If you don't have Web or FTP access, send e-mail to mail-server@rtfm.mit.edu

with body

send usenet/news.answers/jpeg-faq/part1

send usenet/news.answers/jpeg-faq/part2

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ACKNOWLEDGMENTS

=====

Thank to Juergen Bruder for providing me with a copy of the common DCT algorithm article, only to find out that I had come to the same result in a more direct and comprehensible way with a more generative approach.

Thank to Istvan Sebestyen and Joan L. Mitchell for inviting me to the ITU JPEG (Study Group 16) meeting in Geneva, Switzerland.

Thank to Thomas Wiegand and Gary Sullivan for inviting me to the Joint Video Team (MPEG & ITU) meeting in Geneva, Switzerland.

Thank to Thomas Richter and Daniel Lee for inviting me to the ISO/IEC JTC1/SC29/WG1 (also known as JPEG, together with ITU-T SG16) meeting in Berlin, Germany.

Thank to John Korejwa and Massimo Ballerini for inviting me to fruitful consultations in Boston, MA and Milan, Italy.

Thank to Hendrik Elstner, Roland Fassauer, Simone Zuck, Guenther Maier-Gerber, Walter Stoeber, Fred Schmitz, and Norbert Braunagel for corresponding business development.

Thank to Nico Zschach and Dirk Stelling of the technical support team at the Digital Images company in Halle for providing me with extra equipment for configuration tests.

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Thank to Richard F. Lyon (then of Foveon Inc.) for fruitful communication about JPEG configuration in Sigma Photo Pro software.

Thank to Andrew Finkenstadt for hosting the ijg.org site.

Last but not least special thank to Thomas G. Lane for the original design and development of this singular software package.

FILE FORMAT WARS

=====

The ISO/IEC JTC1/SC29/WG1 standards committee (also known as JPEG, together with ITU-T SG16) currently promotes different formats containing the name "JPEG" which is misleading because these formats are incompatible with original DCT-based JPEG and are based on faulty technologies.

IJG therefore does not and will not support such momentary mistakes (see REFERENCES).

There exist also distributions under the name "OpenJPEG" promoting such kind of formats which is misleading because they don't support original JPEG images.

We have no sympathy for the promotion of inferior formats. Indeed, one of the original reasons for developing this free software was to help force convergence on common, interoperable format standards for JPEG files.

Don't use an incompatible file format!

(In any case, our decoder will remain capable of reading existing JPEG image files indefinitely.)

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Furthermore, the ISO committee pretends to be "responsible for the popular JPEG" in their public reports which is not true because they don't respond to actual requirements for the maintenance of the original JPEG specification.

There are currently distributions in circulation containing the name "libjpeg" which claim to be a "derivative" or "fork" of the original libjpeg, but don't have the features and are incompatible with formats supported by actual IJG libjpeg distributions. Furthermore, they violate the license conditions as described under LEGAL ISSUES above.

We have no sympathy for the release of misleading and illegal distributions derived from obsolete code bases.

Don't use an obsolete code base!

TO DO

=====

Version 8 is the first release of a new generation JPEG standard to overcome the limitations of the original JPEG specification.

More features are being prepared for coming releases...

Please send bug reports, offers of help, etc. to jpeg-info@jpegclub.org.

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Libkmod (v8):

libkmod - linux kernel module handling library

ABSTRACT

=====

libkmod was created to allow programs to easily insert, remove and list modules, also checking its properties, dependencies and aliases.

there is no shared/global context information and it can be used by multiple sites on a single program, also being able to be used from threads, although it's not thread safe (you must lock explicitly).

OVERVIEW

=====

Every user should create and manage it's own library context with:

```
struct kmod_ctx *ctx = kmod_new(kernel_dirname);  
  
kmod_unref(ctx);
```

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Modules can be created with by various means:

```
struct kmod_module *mod;

int err;

err = kmod_module_new_from_path(ctx, path, &mod);

if (err < 0) {
    /* code */
} else {
    /* code */

    kmod_module_unref(mod);
}

err = kmod_module_new_from_name(ctx, name, &mod);

if (err < 0) {
    /* code */
} else {
    /* code */

    kmod_module_unref(mod);
}
```

Or could be resolved from a known alias to a list of alternatives:

```
struct kmod_list *list, *itr;

int err;

err = kmod_module_new_from_lookup(ctx, alias, &list);
```

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```
if (err < 0) {  
  
    /* code */  
  
} else {  
  
    kmod_list_foreach(itr, list) {  
  
        struct kmod_module *mod = kmod_module_get_module(itr);  
  
        /* code */  
  
    }  
  
}
```

Libxml2 (v2.7.8):

Except where otherwise noted in the source code (e.g. the files hash.c, list.c and the trio files, which are covered by a similar licence but with different Copyright notices) all the files are:

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LibPcap (v1.2.1):

License: BSD

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Linux (v3.2.26):

Linux kernel release 3.x <<http://kernel.org/>>

These are the release notes for Linux version 3. Read them carefully, as they tell you what this is all about, explain how to install the kernel, and what to do if something goes wrong.

WHAT IS LINUX?

Linux is a clone of the operating system Unix, written from scratch by Linus Torvalds with assistance from a loosely-knit team of hackers across the Net. It aims towards POSIX and Single UNIX Specification compliance.

It has all the features you would expect in a modern fully-fledged Unix, including true multitasking, virtual memory, shared libraries, demand loading, shared copy-on-write executables, proper memory management, and multistack networking including IPv4 and IPv6.

It is distributed under the GNU General Public License - see the accompanying COPYING file for more details.

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ON WHAT HARDWARE DOES IT RUN?

Although originally developed first for 32-bit x86-based PCs (386 or higher), today Linux also runs on (at least) the Compaq Alpha AXP, Sun SPARC and UltraSPARC, Motorola 68000, PowerPC, PowerPC64, ARM, Hitachi SuperH, Cell, IBM S/390, MIPS, HP PA-RISC, Intel IA-64, DEC VAX, AMD x86-64, AXIS CRIS, Xtensa, Tiler TILE, AVR32 and Renesas M32R architectures.

Linux is easily portable to most general-purpose 32- or 64-bit architectures as long as they have a paged memory management unit (PMMU) and a port of the GNU C compiler (`gcc`) (part of The GNU Compiler Collection, GCC). Linux has also been ported to a number of architectures without a PMMU, although functionality is then obviously somewhat limited.

Linux has also been ported to itself. You can now run the kernel as a userspace application - this is called UserMode Linux (UML).

DOCUMENTATION:

- There is a lot of documentation available both in electronic form on the Internet and in books, both Linux-specific and pertaining to general UNIX questions. I'd recommend looking into the documentation subdirectories on any Linux FTP site for the LDP (Linux Documentation Project) books. This README is not meant to be documentation on the system: there are much better sources available.

- There are various README files in the Documentation/ subdirectory: these typically contain kernel-specific installation notes for some

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drivers for example. See Documentation/00-INDEX for a list of what is contained in each file. Please read the Changes file, as it contains information about the problems, which may result by upgrading your kernel.

- The Documentation/DocBook/ subdirectory contains several guides for kernel developers and users. These guides can be rendered in a number of formats: PostScript (.ps), PDF, HTML, & man-pages, among others. After installation, "make psdocs", "make pdfdocs", "make htmdocs", or "make mandocs" will render the documentation in the requested format.

INSTALLING the kernel source:

- If you install the full sources, put the kernel tarball in a directory where you have permissions (eg. your home directory) and unpack it:

```
gzip -cd linux-3.X.tar.gz | tar xvf -
```

or

```
bzip2 -dc linux-3.X.tar.bz2 | tar xvf -
```

Replace "XX" with the version number of the latest kernel.

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Do NOT use the /usr/src/linux area! This area has a (usually incomplete) set of kernel headers that are used by the library header files. They should match the library, and not get messed up by whatever the kernel-du-jour happens to be.

- You can also upgrade between 3.x releases by patching. Patches are distributed in the traditional gzip and the newer bzip2 format. To install by patching, get all the newer patch files, enter the top level directory of the kernel source (linux-3.x) and execute:

```
gzip -cd ../patch-3.x.gz | patch -p1
```

or

```
bzip2 -dc ../patch-3.x.bz2 | patch -p1
```

(repeat xx for all versions bigger than the version of your current source tree, `_in_order_`) and you should be ok. You may want to remove the backup files (`xxx~` or `xxx.orig`), and make sure that there are no failed patches (`xxx#` or `xxx.rej`). If there are, either you or me has made a mistake.

Unlike patches for the 3.x kernels, patches for the 3.x.y kernels (also known as the `-stable` kernels) are not incremental but instead apply directly to the base 3.x kernel. Please read [Documentation/applying-patches.txt](#) for more information.

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Alternatively, the script `patch-kernel` can be used to automate this process. It determines the current kernel version and applies any patches found.

```
linux/scripts/patch-kernel linux
```

The first argument in the command above is the location of the kernel source. Patches are applied from the current directory, but an alternative directory can be specified as the second argument.

- If you are upgrading between releases using the stable series patches (for example, `patch-3.x.y`), note that these "dot-releases" are not incremental and must be applied to the 3.x base tree. For example, if your base kernel is 3.0 and you want to apply the 3.0.3 patch, you do not and indeed must not first apply the 3.0.1 and 3.0.2 patches. Similarly, if you are running kernel version 3.0.2 and want to jump to 3.0.3, you must first reverse the 3.0.2 patch (that is, `patch -R`) `_before_` applying the 3.0.3 patch.

You can read more on this in `Documentation/applying-patches.txt`

- Make sure you have no stale `.o` files and dependencies lying around:

```
cd linux  
make mrproper
```

You should now have the sources correctly installed.

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SOFTWARE REQUIREMENTS

Compiling and running the 3.x kernels requires up-to-date versions of various software packages. Consult Documentation/Changes for the minimum version numbers required and how to get updates for these packages. Beware that using excessively old versions of these packages can cause indirect errors that are very difficult to track down, so don't assume that you can just update packages when obvious problems arise during build or operation.

BUILD directory for the kernel:

When compiling the kernel all output files will per default be stored together with the kernel source code.

Using the option "make O=output/dir" allow you to specify an alternate place for the output files (including .config).

Example:

kernel source code: /usr/src/linux-3.N

build directory: /home/name/build/kernel

To configure and build the kernel use:

```
cd /usr/src/linux-3.N
```

```
make O=/home/name/build/kernel menuconfig
```

```
make O=/home/name/build/kernel
```

```
sudo make O=/home/name/build/kernel modules_install install
```

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Please note: If the 'O=output/dir' option is used then it must be used for all invocations of make.

CONFIGURING the kernel:

Do not skip this step even if you are only upgrading one minor version. New configuration options are added in each release, and odd problems will turn up if the configuration files are not set up as expected. If you want to carry your existing configuration to a new version with minimal work, use "make oldconfig", which will only ask you for the answers to new questions.

- Alternate configuration commands are:

- "make config" Plain text interface.
- "make menuconfig" Text based color menus, radiolists & dialogs.
- "make nconfig" Enhanced text based color menus.
- "make xconfig" X windows (Qt) based configuration tool.
- "make gconfig" X windows (Gtk) based configuration tool.
- "make oldconfig" Default all questions based on the contents of your existing `./config` file and asking about new config symbols.
- "make silentoldconfig"
Like above, but avoids cluttering the screen with questions already answered.
Additionally updates the dependencies.
- "make defconfig" Create a `./config` file by using the default symbol values from either `arch/$ARCH/defconfig`

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or arch/\$ARCH/configs/\${PLATFORM}_defconfig,

depending on the architecture.

"make \${PLATFORM}_defconfig"

Create a `./config` file by using the default

symbol values from

arch/\$ARCH/configs/\${PLATFORM}_defconfig.

Use "make help" to get a list of all available

platforms of your architecture.

"make allyesconfig"

Create a `./config` file by setting symbol

values to 'y' as much as possible.

"make allmodconfig"

Create a `./config` file by setting symbol

values to 'm' as much as possible.

"make allnoconfig" Create a `./config` file by setting symbol

values to 'n' as much as possible.

"make randconfig" Create a `./config` file by setting symbol

values to random values.

You can find more information on using the Linux kernel config tools

in `Documentation/kbuild/kconfig.txt`.

NOTES on "make config":

- having unnecessary drivers will make the kernel bigger, and can

under some circumstances lead to problems: probing for a

nonexistent controller card may confuse your other controllers

- compiling the kernel with "Processor type" set higher than 386

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will result in a kernel that does NOT work on a 386. The

kernel will detect this on bootup, and give up.

- A kernel with math-emulation compiled in will still use the coprocessor if one is present: the math emulation will just never get used in that case. The kernel will be slightly larger, but will work on different machines regardless of whether they have a math coprocessor or not.
- the "kernel hacking" configuration details usually result in a bigger or slower kernel (or both), and can even make the kernel less stable by configuring some routines to actively try to break bad code to find kernel problems (kmallocc()). Thus you should probably answer 'n' to the questions for "development", "experimental", or "debugging" features.

COMPILING the kernel:

- Make sure you have at least gcc 3.2 available.

For more information, refer to Documentation/Changes.

Please note that you can still run a.out user programs with this kernel.

- Do a "make" to create a compressed kernel image. It is also possible to do "make install" if you have lilo installed to suit the kernel makefiles, but you may want to check your particular lilo setup first.

To do the actual install you have to be root, but none of the normal build should require that. Don't take the name of root in vain.

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- If you configured any of the parts of the kernel as `modules`, you will also have to do "make modules_install".

- Verbose kernel compile/build output:

Normally the kernel build system runs in a fairly quiet mode (but not totally silent). However, sometimes you or other kernel developers need to see compile, link, or other commands exactly as they are executed.

For this, use "verbose" build mode. This is done by inserting

"V=1" in the "make" command. E.g.:

```
make V=1 all
```

To have the build system also tell the reason for the rebuild of each target, use "V=2". The default is "V=0".

- Keep a backup kernel handy in case something goes wrong. This is especially true for the development releases, since each new release contains new code which has not been debugged. Make sure you keep a backup of the modules corresponding to that kernel, as well. If you are installing a new kernel with the same version number as your working kernel, make a backup of your modules directory before you do a "make modules_install".

Alternatively, before compiling, use the kernel config option

"LOCALVERSION" to append a unique suffix to the regular kernel version.

LOCALVERSION can be set in the "General Setup" menu.

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- In order to boot your new kernel, you'll need to copy the kernel image (e.g. `.../linux/arch/i386/boot/bzImage` after compilation) to the place where your regular bootable kernel is found.

- Booting a kernel directly from a floppy without the assistance of a bootloader such as LILO, is no longer supported.

If you boot Linux from the hard drive, chances are you use LILO which uses the kernel image as specified in the file `/etc/lilo.conf`. The kernel image file is usually `/vmlinuz`, `/boot/vmlinuz`, `/bzImage` or `/boot/bzImage`. To use the new kernel, save a copy of the old image and copy the new image over the old one. Then, you **MUST RERUN LILO** to update the loading map!! If you don't, you won't be able to boot the new kernel image.

Reinstalling LILO is usually a matter of running `/sbin/lilo`.

You may wish to edit `/etc/lilo.conf` to specify an entry for your old kernel image (say, `/vmlinux.old`) in case the new one does not work. See the LILO docs for more information.

After reinstalling LILO, you should be all set. Shutdown the system, reboot, and enjoy!

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If you ever need to change the default root device, video mode, ramdisk size, etc. in the kernel image, use the 'rdev' program (or alternatively the LILO boot options when appropriate). No need to recompile the kernel to change these parameters.

- Reboot with the new kernel and enjoy.

IF SOMETHING GOES WRONG:

- If you have problems that seem to be due to kernel bugs, please check the file MAINTAINERS to see if there is a particular person associated with the part of the kernel that you are having trouble with. If there isn't anyone listed there, then the second best thing is to mail them to me (torvalds@linux-foundation.org), and possibly to any other relevant mailing-list or to the newsgroup.

- In all bug-reports, *please* tell what kernel you are talking about, how to duplicate the problem, and what your setup is (use your common sense). If the problem is new, tell me so, and if the problem is old, please try to tell me when you first noticed it.

- If the bug results in a message like

```
unable to handle kernel paging request at address C0000010
```

```
Oops: 0002
```

```
EIP: 0010:XXXXXXXX
```

```
eax: xxxxxxxx ebx: xxxxxxxx ecx: xxxxxxxx edx: xxxxxxxx
```

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```
esi: xxxxxxxx edi: xxxxxxxx ebp: xxxxxxxx
```

```
ds: xxxx es: xxxx fs: xxxx gs: xxxx
```

```
Pid: xx, process nr: xx
```

```
xx xx xx xx xx xx xx xx xx xx
```

or similar kernel debugging information on your screen or in your system log, please duplicate it **exactly**. The dump may look incomprehensible to you, but it does contain information that may help debugging the problem. The text above the dump is also important: it tells something about why the kernel dumped code (in the above example it's due to a bad kernel pointer). More information on making sense of the dump is in Documentation/oops-tracing.txt

- If you compiled the kernel with CONFIG_KALLSYMS you can send the dump as is, otherwise you will have to use the "ksymoops" program to make sense of the dump (but compiling with CONFIG_KALLSYMS is usually preferred).

This utility can be downloaded from

<ftp://ftp.<country>.kernel.org/pub/linux/utils/kernel/ksymoops/> .

Alternately you can do the dump lookup by hand:

- In debugging dumps like the above, it helps enormously if you can look up what the EIP value means. The hex value as such doesn't help me or anybody else very much: it will depend on your particular kernel setup. What you should do is take the hex value from the EIP line (ignore the "0010:"), and look it up in the kernel namelist to see which kernel function contains the offending address.

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To find out the kernel function name, you'll need to find the system binary associated with the kernel that exhibited the symptom. This is the file 'linux/vmlinux'. To extract the namelist and match it against the EIP from the kernel crash, do:

```
nm vmlinux | sort | less
```

This will give you a list of kernel addresses sorted in ascending order, from which it is simple to find the function that contains the offending address. Note that the address given by the kernel debugging messages will not necessarily match exactly with the function addresses (in fact, that is very unlikely), so you can't just 'grep' the list: the list will, however, give you the starting point of each kernel function, so by looking for the function that has a starting address lower than the one you are searching for but is followed by a function with a higher address you will find the one you want. In fact, it may be a good idea to include a bit of "context" in your problem report, giving a few lines around the interesting one.

If you for some reason cannot do the above (you have a pre-compiled kernel image or similar), telling me as much about your setup as possible will help. Please read the REPORTING-BUGS document for details.

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- Alternately, you can use gdb on a running kernel. (read-only; i.e. you cannot change values or set break points.) To do this, first compile the kernel with -g; edit arch/i386/Makefile appropriately, then do a "make clean". You'll also need to enable CONFIG_PROC_FS (via "make config").

After you've rebooted with the new kernel, do "gdb vmlinux /proc/kcore".

You can now use all the usual gdb commands. The command to look up the point where your system crashed is "l *0XXXXXXXX". (Replace the XXXes with the EIP value.)

gdb'ing a non-running kernel currently fails because gdb (wrongly) disregards the starting offset for which the kernel is compiled.

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Lsof (v4.85):

lsof (LiSt Open Files) version 4

(revision 4.85)

| The latest release of lsof is always available via anonymous ftp |

| from lsof.itap.purdue.edu. Look in pub/tools/unix/lsof. |

| CHECK THE PATCHES/ SUBDIRECTORY FOR FIXES TO THE LATEST LSOF DISTRIBUTION. |

| AVOID USING PRE-BUILT LSOF BINARIES: SEE THE "PRE-BUILT LSOF BINARIES" |

| SECTION IN 00README FOR AN EXPLANATION. |

| READ 00LSOF-L FOR INFORMATION ON THE LSOF-L LISTSERV MAILING LIST. |

| CHECK 00FAQ BEFORE REPORTING BUGS TO <abe@purdue.edu>. |

| 00FAQ ALSO AT: ftp://lsof.itap.purdue.edu/pub/tools/unix/lsof/FAQ |

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| IMPORTANT! This README file explains how the lsof tar archive |
| is assembled -- it's a "wrapper" tar archive. Please read the |
| explanation of its naming and construction, immediately |
| following the initial list of supported dialects. |

Lsof version 4 lists open files for running UNIX processes. It is a
descendent of ofiles, fstat, and lsof versions 1, 2, and 3. It has
been tested recently on these UNIX dialects.

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AIX 5.3

Apple Darwin 9 and Mac OS X 10.[56]

FreeBSD 4.9 and 6.4 for x86-based systems

FreeBSD 8.[02] and 9.0 for AMD64-based systems

Linux 2.1.72 and above for x86-based systems

Solaris 9, 10 and 11

Lsof 4 may work on other versions of these dialects, but hasn't been tested there recently. Lsof versions 2 and 3 are still available and may provide older dialect version support. See the notes on them in this file.

The pub/tools/unix/lsof/contrib directory on lsof.itap.purdue.edu also contains information on other ports.

Version 4 of lsof is distributed as bzip2'd, gzip'd and compressed tar archives in the files:

<ftp://lsof.itap.purdue.edu/pub/tools/unix/lsof/lsof.tar.bz2>

and

<ftp://lsof.itap.purdue.edu/pub/tools/unix/lsof/lsof.tar.gz>

and

<ftp://lsof.itap.purdue.edu/pub/tools/unix/lsof/lsof.tar.Z>

These files are links to the current distribution, whose name includes the revision number:

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`ftp://lsof.itap.purdue.edu/pub/tools/unix/lsof_<rev>.tar.bz2`

and

`ftp://lsof.itap.purdue.edu/pub/tools/unix/lsof_<rev>.tar.gz`

and

`ftp://lsof.itap.purdue.edu/pub/tools/unix/lsof_<rev>.tar.Z`

<rev> is the revision number -- e.g., 4.85. These archives are called wrappers, because the lsof source tar archive, its GPG certificate (lsof_<rev>_src.tar.sig), and some documentation files are wrapped together inside them. (The GPG certificate authenticates the source tar archive.) A tar archive with a ``.bz2" suffix has been compressed with bzip2; ``.gz", with gzip; and ``.Z", with compress.

When the wrapper tar is gunzip'd or uncompressed, and its tar archive contents are extracted, an lsof_4.85 subdirectory is created in the directory where the extraction was performed. The lsof_4.85 subdirectory contains these files:

00.README.FIRST contains introductory distribution
information.

README.lsof_4.85 contains instructions for the
security-conscious on how to be
sure that no one has tampered with
the distribution.

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RELEASE_SUMMARY_4.85 is this file.

lsof_4.85_src.tar is a tar archive, containing the
lsof sources. When extracted with
tar it creates a subdirectory named
lsof_4.85_src in the directory
where the extraction was performed.
The lsof source files will be found
in lsof_4.85_src.

lsof_4.85_src.tar.sig is a GPG certificate, authenticating
the lsof_4.85_src.tar archive. See the
README.lsof_4.85 file for more
information on GPG authentication of
lsof_4.85_src.tar.

If you've obtained this file and an lsof distribution from a mirror
site, please be aware that THE LATEST VERSION OF LSOF IS AVAILABLE VIA
ANONYMOUS FTP FROM LSOF.ITAP.PURDUE.EDU IN THE PUB/TOOLS/UNIX/LSOF
DIRECTORY.

Patches to lsof distributions may be found in the patches/ sub-
directory where you found lsof.tar.bz2, lsof.tar.gz or lsof.tar.Z.

If there are any patches to the current distribution, they will be
found in the patches/4.85/ branch.

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(If you need a copy of gunzip, look for it at prep.ai.mit.edu in `pub/gnu/gzip*`.)

* The September 27, 2011 revision (4.85): adds an automatic work-around for an `lgrp_root` conflict in some Solaris 9 and 10 versions; supports FreeBSD 7.4 and 8.[12] (8.1 not tested); adds fixes for Solaris 11 kernel module path determination; picked lint for Linux; added more Linux cross configuration support; adds support for Mac OS X 10.6; tested on FreeBSD 6.4; adapts to FreeBSD ZFS update; drops support for FreeBSD 7.x; adjusts for Solaris 10 with patch 144488-10; added Linux `+|-e` option support; adjusts for a FreeBSD 9 change; fixes a Linux `AF_UNIX` path reporting bug; adjusts for dropping of RPC headers from Linux Glibc 2.14; adds Linux Netlink protocol support; corrects UDP6-lite Linux path.

Read the `00.README.FIRST` in the `lsof` distribution first.

Read the `00DIST` distribution file for more details on feature additions and bug fixes.

The `00README` distribution file has build instructions, dialect descriptions, special feature discussions, and installation hints.

The `00FAQ` file contains a list of frequently asked questions and their answers.

The `00DCACHE` file explains device cache file path formation.

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The 00PORTING file contains information on porting lsof to other UNIX dialects.

The 00QUICKSTART file gives a quick introduction to using lsof.

The distribution files lsof.8 (nroff source) and lsof.man (nroff formatted output) contain the manual page for lsof; it is the only other documentation besides the source code (it's included).

Version 4 Binaries

=====

Version 4 binaries for some revisions, dialects, and platforms may be found in pub/tools/unix/lsof/binaries. Check the README files for exact descriptions. Check the dialect-specific Makefiles for installation instructions. CHECKSUMS and GPG certificates are provided for authentication.

Please think very carefully before you decide to use a pre-built binary instead of making your own from the sources. Here are some points to consider:

1. Lsof must run setgid or setuid. Are you willing to trust that power to a binary you didn't construct yourself?

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2. Lsof binaries may be generated on a system whose configuration header files differ from yours. Under Digital UNIX (DEC OSF/1), for example, lsof includes header files from the machine's configuration directory, /sys/<name>. Are you willing to gamble that your configuration directory's header files match the ones used to compile lsof?

3. Lsof is often configured with specific options that are determined from the configuration of the system on which it is configured -- e.g., Solaris patch level, dynamic loader libraries, etc. Are you sure that the lsof binary you retrieve will have been configured for your system? If you get a binary that is misconfigured for you, it may not work at all.

If you haven't already guessed, I believe firmly that you should retrieve sources and build your own binary. If you still want to use the distribution binaries, please authenticate what you retrieved with the GPG certificates; please compare checksums, too.

Version 4 Checksums

=====

Security checksums -- both MD5 and sum(1) -- for revisions of lsof version 4 are contained in the README.lsof_<rev> files in the wrapper tar archives of pub/tools/unix/lsof.

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The CHECKSUMS file, found with the distribution archives, contains information on validating the archives with external MD5 checksums and external GPG certificates.

GPG Certificates

=====

The lsof wrapper tar archive includes a GPG certificate file in its contained lsof_4.71_src.tar.sig file.

Binary files have detached GPG certificates that may be found in their directories with ".sig" extensions.

The certificates are signed with my GPG public key, which may be found in the file:

ftp://lsof.itap.purdue.edu/pub/tools/unix/lsof/Victor_A_Abell.gpg

My key may also be available at some public key servers,

There is also authentication information in the CHECKSUMS file (a link to CHECKSUMS_<rev>), found with the lsof distribution files. CHECKSUMS contains external MD5 checksums for the distribution files and information on using the external GPG certificates, found with the lsof distribution files.

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Old Dialect Support

=====

Remnants of source code and binaries for dialects for which I so far once provided support may be obtained by request. Send the request to abe@purdue.edu.

Dialects no longer supported include:

CDC EP/IX

MIPS RISC/os

Motorola V/88

Pyramid DC/OSx

Pyramid Reliant UNIX

Sequent DYNIX

SGI IRIX

SunOS 4.1.x

Ultrix

Generally I drop support for a dialect when I no longer have access to a test system.

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Lsof Version 2

=====

The version 3 predecessor, revision 36 of version 2, is also available upon request. Send the request to abe@purdue.edu.

I recommend you avoid lsof version 2. It's out of date and I no longer provide support for it. (Versions 3 and 4 support more dialects, and have many enhancements, bug fixes, and improvements.)

Version 2 was tested on the following UNIX dialects:

AIX 3.2.[1234] for the IBM RISC/System 6000

DEC OSF/1 1.[23] and 2.0 for the DEC Alpha

EP/IX 1.4.3 and 2.1.1 for the CDC 4680

ETAV 1.17 for the ETA-10P*

FreeBSD 1.0e for x86-based systems

HP-UX [789].x for HP systems

IRIX 4.0.5 and 5.1.1 for SGI systems

NEXTSTEP 2.1, 3.0, 3.1 for NeXT systems

Sequent Dynix 3.0.12 for Sequent Symmetry systems

SunOS 4.1.[123] for Sun 3 and 4 systems

SunOS 5.[13] (Solaris 2.[13]) for Sun 4 systems

Ultrix 2.2 and 4.2 for DEC systems

(If you need a copy of gunzip, look for it at prep.ai.mit.edu in `pub/gnu`.)

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Version 2 Checksums

=====

MD5:

(OLD/lsof236tar.gz) = f8a1ab3971ea2f6a3ea16752f84409e8

sum(1):

39996 106 OLD/lsof236tar.gz

The file OLD/lsof236tar.gz.asc is a detached PGP certificate that may be used to authenticate OLD/lsof236tar.gz with my PGP public key. You may find my PGP public key at:

ftp://lsof.itap.purdue.edu/pub/tools/unix/lsof/OLD/Victor_A_Abell.pgp

Lsof Version 3

=====

The last revision of lsof version 3, 3.88, may be obtained by request.

Send the request to abe@purdue.edu.

I recommend version 4 over version 3. It is the version I actively support.

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Lsof version 3 was tested on these UNIX dialects:

AIX 3.2.5, 4.1.[1234], and 4.2

BSDI BSD/OS 2.0, 2.0.1, and 2.1 for x86-based systems

DC/OSx 1.1 for Pyramid systems

Digital UNIX (DEC OSF/1) 2.0, 3.0, 3.2, and 4.0

EP/IX 2.1.1 for the CDC 4680

FreeBSD 1.1.5.1, 2.0, 2.0.5, 2.1, 2.1.5 for x86-based
systems

HP-UX 8.x, 9.x, 10.01, 10.10, and 10.20

IRIX 5.2, 5.3, 6.0, 6.0.1, and 6.[124]

Linux 2.0.3[01] and 2.1.57 for x86-based systems

NetBSD 1.0, 1.1, and 1.2 for x86 and SPARC-based
systems

NEXTSTEP 2.1 and 3.[0123] for NEXTSTEP architectures

OpenBSD 1.2 and 2.0 for x86-based systems

Reliant UNIX 5.43 for Pyramid systems

RISC/os 4.52 for MIPS R2000-based systems

SCO OpenServer 1.1, 3.0, and 5.0.[024] for x86-based
systems

SCO UnixWare 2.1 and 2.1.1 for x86-based systems

Sequent PTX 2.1.[1569], 4.0.[23], 4.1.[024], 4.2.[1],
and 4.3

Solaris 2.[12345], 2.5.1, and 2.6-Beta

SunOS 4.1.x

Ultrix 4.2, 4.3, 4.4, and 4.5

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Vic Abell <abe@purdue.edu>

September 27, 2011

LibXml2 (v2.7.8):

Except where otherwise noted in the source code (e.g. the files hash.c, list.c and the trio files, which are covered by a similar licence but with different Copyright notices) all the files are:

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Memstat (v0.8):

This is Debian GNU/Linux's prepackaged version of Joshua M. Yelon's memstat, for a long time maintained upstream by Bernd Eckenfels <eck@debian.org> and now maintained by Michael Meskes <meskes@debian.org>.

This package was put together by me, Bernd Eckenfels <eck@debian.org>, from the sources, which I obtained from <http://charm.cs.uiuc.edu/~jyelon/software.html>

The debian/* Files are based on Ian Jackson's hello Package.

All patches by me are subject to the GPL.

Original Copyright from memstat.c:

- * This software copyright 1997 Joshua M. Yelon.
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On Debian GNU/Linux systems, the complete text of the GNU General Public License can be found in `/usr/share/common-licenses/GPL`.

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Ncurses (v5.7):

```
-----  
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-- authorization.                                                    --
```

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-- \$Id: README,v 1.23 2006/04/22 22:19:37 tom Exp \$

README file for the ncurses package

See the file ANNOUNCE for a summary of ncurses features and ports.

See the file INSTALL for instructions on how to build and install ncurses.

See the file NEWS for a release history and bug-fix notes.

See the file TO-DO for things that still need doing, including known bugs.

Browse the file misc/ncurses-intro.html for narrative descriptions of how to use ncurses and the panel, menu, and form libraries.

Browse the file doc/html/hackguide.html for a tour of the package internals.

ROADMAP AND PACKAGE OVERVIEW:

You should be reading this file in a directory called: ncurses-d.d, where d.d is the current version number (see the dist.mk file in this directory for that). There should be a number of subdirectories, including `c++', `form', `man', `menu', `misc', `ncurses', `panel', `progs', `test', `tack' and `Ada95'. (The `tack' program may be distributed separately).

A full build/install of this package typically installs several libraries, a handful of utilities, and a database hierarchy. Here is an inventory of the pieces:

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The libraries are:

libncurses.a	(normal)
libncurses.so	(shared)
libncurses_g.a	(debug and trace code enabled)
libncurses_p.a	(profiling enabled)
libpanel.a	(normal)
libpanel.so	(shared)
libpanel_g.a	(debug and trace code enabled)
libmenu.a	(normal)
libmenu.so	(shared)
libmenu_g.a	(debug enabled)
libform.a	(normal)
libform.so	(shared)
libform_g.a	(debug enabled)

If you configure using the `--enable-widec` option, a "w" is appended to the library names (e.g., `libncursesw.a`), and the resulting libraries support wide-characters, e.g., via a UTF-8 locale. The corresponding header files are compatible with the non-wide-character configuration; wide-character features are provided by `ifdef`'s in the header files. The wide-character library interfaces are not binary-compatible with the non-wide-character version.

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The ncurses libraries implement the curses API. The panel, menu and forms libraries implement clones of the SVr4 panel, menu and forms APIs. The source code for these lives in the ``ncurses'`, ``panel'`, ``menu'`, and ``form'` directories respectively.

In the ``c++'` directory, you'll find code that defines an interface to the curses, forms, menus and panels library packaged as C++ classes, and a demo program in C++ to test it. These class definition modules are not installed by the `'make install.libs'` rule as `libncurses++`.

In the ``Ada95'` directory, you'll find code and documentation for an Ada95 binding of the curses API, to be used with the GNAT compiler. This binding is built by a normal top-level ``make'` if configure detects an usable version of GNAT (3.11 or above). It is not installed automatically. See the Ada95 directory for more build and installation instructions and for documentation of the binding.

To do its job, the ncurses code needs your terminal type to be set in the environment variable `TERM` (normally set by your OS; under UNIX, `getty(1)` typically does this, but you can override it in your `.profile`); and, it needs a database of terminal descriptions in which to look up your terminal type's capabilities.

In older (V7/BSD) versions of curses, the database was a flat text file, `/etc/termcap`; in newer (USG/USL) versions, the database is a hierarchy of fast-loading binary description blocks under `/usr/lib/terminfo`. These binary blocks are compiled from an improved editable text representation called

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`terminfo' format (documented in man/terminfo.5). The ncurses library can use either /etc/termcap or the compiled binary terminfo blocks, but prefers the second form.

In the `misc' directory, there is a text file terminfo.src, in editable terminfo format, which can be used to generate the terminfo binaries (that's what make install.data does). If the package was built with the --enable-termcap option enabled, and the ncurses library cannot find a terminfo description for your terminal, it will fall back to the termcap file supplied with your system (which the ncurses package installation leaves strictly alone).

The utilities are as follows:

```
tic          -- terminfo source to binary compiler
infocmp     -- terminfo binary to source decompiler/comparator
clear       -- emits clear-screen for current terminal
tput        -- shell-script access to terminal capabilities.
toe         -- table of entries utility
tset        -- terminal-initialization utility
```

The first two (tic and infocmp) are used for manipulating terminfo descriptions; the next two (clear and tput) are for use in shell scripts. The last (tset) is provided for 4.4BSD compatibility. The source code for all of these lives in the `progs' directory.

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Detailed documentation for all libraries and utilities can be found in the `man' and `doc' directories. An HTML introduction to ncurses, panels, and menus programming lives in the `doc/html' directory. Manpages in HTML format are under `doc/html/man'.

The `test' directory contains programs that can be used to verify or demonstrate the functions of the ncurses libraries. See test/README for descriptions of these programs. Notably, the `ncurses' utility is designed to help you systematically exercise the library functions.

AUTHORS:

Pavel Curtis:

wrote the original ncurses

Zeyd M. Ben-Halim:

port of original to Linux and many enhancements.

Thomas Dickey (maintainer for 1.9.9g through 4.1, resuming with FSF's 5.0):

configuration scripts, porting, mods to adhere to XSI Curses in the areas of background color, terminal modes. Also memory leak testing, the wresize, default colors and key definition extensions and numerous bug fixes (more than half of those enumerated in NEWS beginning with the internal release 1.8.9).

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Florian La Roche (official maintainer for FSF's ncurses 4.2)

Beginning with release 4.2, ncurses is distributed under an MIT-style license.

Eric S. Raymond:

the man pages, infocmp(1), tput(1), clear(1), captinfo(1), tset(1), toe(1), most of tic(1), trace levels, the HTML intro, wgetnstr() and many other entry points, the cursor-movement optimization, the scroll-pack optimizer for vertical motions, the mouse interface and xterm mouse support, and the ncurses test program.

Juergen Pfeifer

The menu and form libraries, C++ bindings for ncurses, menus, forms and panels, as well as the Ada95 binding. Ongoing support for panel.

CONTRIBUTORS:

Alexander V. Lukyanov

for numerous fixes and improvements to the optimization logic.

David MacKenzie

for first-class bug-chasing and methodical testing.

Ross Ridge

for the code that hacks termcap parameterized strings into terminfo.

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Warren Tucker and Gerhard Fuernkranz,

for writing and sending the panel library.

Hellmuth Michaelis,

for many patches and testing the optimization code.

Eric Newton, Ulrich Drepper, and Anatoly Ivasyuk:

the C++ code.

Jonathan Ross,

for lessons in using sed.

Keith Bostic (maintainer of 4.4BSD curses)

for help, criticism, comments, bug-finding, and being willing to
deep-six BSD curses for this one when it grew up.

Richard Stallman,

for his commitment to making ncurses free software.

Countless other people have contributed by reporting bugs, sending fixes,
suggesting improvements, and generally whining about ncurses :-)

BUGS:

See the INSTALL file for bug and developer-list addresses.

The Hacker's Guide in the doc directory includes some guidelines
on how to report bugs in ways that will get them fixed most quickly.

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OpenSSL (v1.0.1g):

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=====

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* =====

*

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* Hudson (tjh@cryptsoft.com).

*

*/

Original SSLeay License

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*

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* by Eric Young (eay@cryptsoft.com).

* The implementation was written so as to conform with Netscapes SSL.

*

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- */

Pcre (v8.30):

PCRE LICENCE

PCRE is a library of functions to support regular expressions whose syntax and semantics are as close as possible to those of the Perl 5 language.

Release 8 of PCRE is distributed under the terms of the "BSD" licence, as specified below. The documentation for PCRE, supplied in the "doc" directory, is distributed under the same terms as the software itself.

The basic library functions are written in C and are freestanding. Also included in the distribution is a set of C++ wrapper functions, and a just-in-time compiler that can be used to optimize pattern matching. These are both optional features that can be omitted when the library is built.

THE BASIC LIBRARY FUNCTIONS

Written by: Philip Hazel

Email local part: ph10

Email domain: cam.ac.uk

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University of Cambridge Computing Service,

Cambridge, England.

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PCRE JUST-IN-TIME COMPILATION SUPPORT

Written by: Zoltan Herczeg

Email local part: hzmester

Email domain: freemail.hu

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STACK-LESS JUST-IN-TIME COMPILER

Written by: Zoltan Herczeg

Email local part: hzmester

Email domain: freemail.hu

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THE C++ WRAPPER FUNCTIONS

Contributed by: Google Inc.

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Popt (v1.16):

This is the popt(3) command line option parsing library. While it is similar to getopt(3), it contains a number of enhancements, including:

- 1) popt is fully reentrant
- 2) popt can parse arbitrary argv[] style arrays while
getopt(3) makes this quite difficult
- 3) popt allows users to alias command line arguments
- 4) popt provides convenience functions for parsing strings
into argv[] style arrays

Complete documentation on popt(3) is available in popt.ps (included in this tarball), which is excerpted with permission from the book "Linux Application Development" by Michael K. Johnson and Erik Troan (available from Addison Wesley in May, 1998).

Comments on popt should be addressed to popt-devel@rpm5.org.

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ROM-Bootloader:

Boot strategies

AT91 chips embed a boot ROM code. It is enabled depending on BMS (Boot Mode Select) pin state on reset.

The ROM code scans the contents of different media like serial FLASH, NAND FLASH, SD/MMC Card and serial EEPROM.

If a valid application is available then it downloads this application into the chip internal SRAM and runs it.

To determine if a valid application is present the ROM code checks the eight ARM exception vectors.

If no valid application is available then SAM-BA Monitor is executed. It waits for transactions either on the USB device, or on the DBGU serial port, then the SAM-BA tool can be used to program FLASH or EEPROM present on your board.

For more information on this topic, please check the corresponding SAM product datasheet section Boot Strategies.

GNU Tar (v1.17):

README for GNU tar

See the end of file for copying conditions.

* Introduction

Please glance through *all* sections of this

'README' file before starting configuration. Also make sure you read files

'ABOUT-NLS' and 'INSTALL' if you are not familiar with them already.

If you got the 'tar' distribution in 'shar' format, time stamps ought to be properly restored; do not ignore such complaints at 'unshar' time.

GNU 'tar' saves many files together into a single tape or disk

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archive, and can restore individual files from the archive. It includes multivolume support, the ability to archive sparse files, automatic archive compression/decompression, remote archives and special features that allow 'tar' to be used for incremental and full backups. This distribution also includes 'rmt', the remote tape server. The 'mt' tape drive control program is in the GNU 'cpio' distribution.

GNU 'tar' is derived from John Gilmore's public domain 'tar'.

See file 'ABOUT-NLS' for how to customize this program to your language.

See file 'COPYING' for copying conditions.

See file 'INSTALL' for compilation and installation instructions.

See file 'PORTS' for various ports of GNU tar to non-Unix systems.

See file 'NEWS' for a list of major changes in the current release.

See file 'THANKS' for a list of contributors.

Besides those configure options documented in files 'INSTALL' and 'ABOUT-NLS', an extra option may be accepted after './configure':

* Install

** Selecting the default archive format.

The default archive format is GNU, this can be overridden by presetting `DEFAULT_ARCHIVE_FORMAT` while configuring. The allowed values are GNU, V7, OLDGNU, USTAR and POSIX.

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** Selecting the default archive device

The default archive device is now 'stdin' on read and 'stdout' on write.

The installer can still override this by presetting 'DEFAULT_ARCHIVE'

in the environment before configuring (the behavior of '-[0-7]' or

'-[0-7]lmh' options in 'tar' are then derived automatically). Similarly,

'DEFAULT_BLOCKING' can be preset to something else than 20.

** Selecting full pathname of the "rmt" binary.

Previous versions of tar always looked for "rmt" binary in the

directory "/etc/rmt". However, the "rmt" program included

in the distribution was installed under "\$prefix/libexec/rmt".

To fix this discrepancy, tar now looks for "\$prefix/libexec/rmt".

If you do not want this behavior, specify full path name of

"rmt" binary using DEFAULT_RMT_DIR variable, e.g.:

```
./configure DEFAULT_RMT_DIR=/etc
```

If you already have a copy of "rmt" installed and wish to use it

instead of the version supplied with the distribution, use --with-rmt

option:

```
./configure --with-rmt=/etc/rmt
```

This will also disable building the included version of rmt.

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** Installing backup scripts.

This version of tar is shipped with the shell scripts for producing incremental backups (dumps) and restoring filesystems from them.

The name of the backup script is "backup". The name of the restore script is "restore". They are installed in "\$prefix/sbin" directory.

Use option --enable-backup-scripts to compile and install these scripts.

** '--disable-largefile' omits support for large files, even if the operating system supports large files. Typically, large files are those larger than 2 GB on a 32-bit host.

* Installation hints

Here are a few hints which might help installing 'tar' on some systems.

** gzip and bzip2.

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GNU tar uses the gzip and bzip2 programs to read and write compressed archives. If you don't have these programs already, you need to install them. Their sources can be found at:

<ftp://ftp.gnu.org/gnu/gzip/>

<http://sourceware.cygnus.com/bzip2/>

If you see the following symptoms:

```
$ tar -xzf file.tar.gz
```

```
gzip: stdin: decompression OK, trailing garbage ignored
```

```
tar: Child returned status 2
```

then you have encountered a gzip incompatibility that should be fixed in gzip test version 1.3, which as of this writing is available at <ftp://alpha.gnu.org/gnu/gzip/>. You can work around the incompatibility by using a shell command like

```
'gzip -d <file.tar.gz | tar -xzf -'.
```

** Solaris issues.

GNU tar exercises many features that can cause problems with older GCC versions. In particular, GCC 2.8.1 (sparc, -O1 or -O2) is known to miscompile GNU tar. No compiler-related problems have been reported when using GCC 2.95.2 or later.

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Recent versions of Solaris tar sport a new -E option to generate extended headers in an undocumented format. GNU tar does not understand these headers.

** Static linking.

Some platform will, by default, prepare a smaller 'tar' executable which depends on shared libraries. Since GNU 'tar' may be used for system-level backups and disaster recovery, installers might prefer to force static linking, making a bigger 'tar' executable maybe, but able to work standalone, in situations where shared libraries are not available.

The way to achieve static linking varies between systems. Set LDFLAGS to a value from the table below, before configuration (see 'INSTALL').

Platform	Compiler	LDFLAGS
(any)	Gnu C	-static
AIX	(vendor)	-bnso -bI:/lib/syscalls.exp
HPUX	(vendor)	-Wl,-a,archive
IRIX	(vendor)	-non_shared
OSF	(vendor)	-non_shared
SCO 3.2v5	(vendor)	-dn
Solaris	(vendor)	-Bstatic
SunOS	(vendor)	-Bstatic

** Failed tests 'ignfail.sh' or 'incremen.sh'.

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In an NFS environment, lack of synchronization between machine clocks might create difficulties to any tool comparing dates and file time stamps, like 'tar' in incremental dumps. This has been a recurrent problem with GNU Make for the last few years. We would like a general solution.

** BSD compatibility matters.

Set LIBS to '-lbsd' before configuration (see 'INSTALL') if the linker complains about 'bsd_ioctl' (Slackware). Also set CPPFLAGS to '-I/usr/include/bsd' if <sgtty.h> is not found (Slackware).

** OPENStep 4.2 swap files

Tar cannot read the file /private/vm/swapfile.front (even as root). This file is not a real file, but some kind of uncompressed view of the real compressed swap file; there is no reason to back it up, so the simplest workaround is to avoid tarring this file.

* Special topics

Here are a few special matters about GNU 'tar', not related to build matters. See previous section for such.

** File attributes.

About *security*, it is probable that future releases of 'tar' will have some behavior changed. There are many pending suggestions to choose from.

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Today, extracting an archive not being 'root', 'tar' will restore suid/sgid bits on files but owned by the extracting user. 'root' automatically gets a lot of special privileges, '-p' might later become required to get them.

GNU 'tar' does not properly restore symlink attributes. Various systems implement flavors of symbolic links showing different behavior and properties. We did not successfully sorted all these out yet. Currently, the 'lchown' call will be used if available, but that's all.

** POSIX compliance.

GNU 'tar' is able to create archive in the following formats:

- *** The format of UNIX version 7
- *** POSIX.1-1988 format, also known as "ustar format"
- *** POSIX.1-2001 format, also known as "pax format"
- *** Old GNU format (described below)

In addition to those, GNU 'tar' is also able to read archives produced by 'star' archiver.

A so called 'Old GNU' format is based on an early draft of the POSIX 1003.1 'ustar' standard which is different from the final standard. It defines its extensions (such as incremental backups and handling of the long file names) in a way incompatible with any existing tar archive format, therefore the use of old GNU format is strongly discouraged.

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Please read the file NEWS for more information about POSIX compliance and new 'tar' features.

* What's next?

GNU tar will be merged into GNU paxutils: a project containing several utilities related to creating and handling archives in various formats. The project will include tar, cpio and pax utilities.

* Bug reporting.

Send bug reports to <bug-tar@gnu.org>. A bug report should contain an adequate description of the problem, your input, what you expected, what you got, and why this is wrong. Diffs are welcome, but they only describe a solution, from which the problem might be uneasy to infer.

If needed, submit actual data files with your report. Small data files are preferred. Big files may sometimes be necessary, but do not send them to the report address; rather take special arrangement with the maintainer.

Your feedback will help us to make a better and more portable package.

Consider documentation errors as bugs, and report them as such. If you develop anything pertaining to 'tar' or have suggestions, let us know and share your findings by writing to <bug-tar@gnu.org>.

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* Copying

Copyright 1990-1992, 1994, 1997-2001, 2003-2004, 2007, 2012-2013 Free
Software Foundation, Inc.

This file is part of GNU tar.

GNU tar is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation; either version 3 of the License, or
(at your option) any later version.

GNU tar is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <<http://www.gnu.org/licenses/>>.

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NOTE ON COPYRIGHT YEARS

In copyright notices where the copyright holder is the Free Software Foundation, then where a range of years appears, this is an inclusive range that applies to every year in the range. For example: 2005-2008 represents the years 2005, 2006, 2007, and 2008.

Local Variables:

mode: outline

paragraph-separate: "[]*\$"

version-control: never

End:

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u-boot (v2010.09):

U-Boot is Free Software. It is copyrighted by Wolfgang Denk and many others who contributed code (see the actual source code and the git commit messages for details). You can redistribute U-Boot and/or modify it under the terms of version 2 of the GNU General Public License as published by the Free Software Foundation. Most of it can also be distributed, at your option, under any later version of the GNU General Public License -- see individual files for exceptions.

NOTE! This license does not cover the so-called "standalone" applications that use U-Boot services by means of the jump table provided by U-Boot exactly for this purpose - this is merely considered normal use of U-Boot, and does not fall under the heading of "derived work" -- see file Licenses/Exceptions for details.

Also note that the GPL and the other licenses are copyrighted by the Free Software Foundation and other organizations, but the instance of code that they refer to (the U-Boot source code) is copyrighted by me and others who actually wrote it.

-- Wolfgang Denk

Like many other projects, U-Boot had a tradition of including big blocks of License headers in all files. This not only blew up the source code with mostly redundant information, but also made it very difficult to generate License Clearing Reports. An additional problem was that even the same licenses were referred to by a number of slightly varying text blocks (full, abbreviated, different indentation, line wrapping and/or white space, with obsolete address information, ...) which made automatic processing a nightmare.

To make this easier, such license headers in the source files have been replaced with a single line reference to Unique License Identifiers as defined by the Linux Foundation's SPDX project [1]. For example, in a source file the full "GPL v2.0 or later" header text was replaced by a single line:

```
SPDX-License-Identifier:    GPL-2.0+
```

We use the SPDX Unique License Identifiers here; these are available at [2].

[1] <http://spdx.org/>

[2] <http://spdx.org/licenses/>

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uClibc (v0.9.31.1):

A C library for embedded Linux

uClibc (aka μ Clibc/pronounced yew-see-lib-see) is a C library for developing embedded Linux systems. It is much smaller than the GNU C Library, but nearly all applications supported by glibc also work perfectly with uClibc. Porting applications from glibc to uClibc typically involves just recompiling the source code. uClibc even supports shared libraries and threading. It currently runs on standard Linux and MMU-less (also known as μ Clinux) systems with support for alpha, amd64, ARM, Blackfin, cris, h8300, hppa, i386, i960, ia64, m68k, mips/mipsel, PowerPC, SH, SPARC, and v850 processors.

If you are building an embedded Linux system and you find that glibc is eating up too much space, you may want to consider using uClibc. If you are building a huge fileservers with 12 Terabytes of storage, then using glibc may make more sense. Unless, for example, that 12 Terabytes will be Network Attached Storage and you plan to burn Linux into the system's firmware...

uClibc is maintained by Erik Andersen and is licensed under the GNU LESSER GENERAL PUBLIC LICENSE . This license allows you to make closed source commercial applications using uClibc. (Please consider sharing some of the money you make ;-). You do not need to give away all your source code just because you use uClibc and/or run on Linux. See the list of Frequently Asked Questions for details.

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Please visit our sponsors and thank them for their support! They have provided money for equipment and bandwidth. Next time you need help with a project, consider these fine companies!

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If you wish to be a sponsor, or if you have already contributed and would like your name added here, email Erik.

Do you like uClibc? Do you need support? Do you need some features added? Then why not help out? We are happy to accept donations (such as bandwidth, mirrors sites, and hardware for the various architectures). We can also provide support contracts, and implement funded feature requests. To contribute, you can either click on the Donate image to donate using PayPal, or you can contact Erik at CodePoet Consulting (we have a credit card machine so you can avoid PayPal if you wish).

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Udev (v058):

udev - a userspace implementation of devfs

For more information on the design, and structure of this project, see the files in the docs/ directory.

To use:

- You must be running a 2.6 version of the Linux kernel.
- Your 2.6 kernel must have had CONFIG_HOTPLUG enabled when it was built.
- Make sure sysfs is mounted. udev will figure out where sysfs is mounted, but the traditional place for it is at /sys. You can mount it by hand by running:

```
mount -t sysfs none /sys
```

- Make sure you have the latest version of the linux-hotplug scripts. They are available at linux-hotplug.sf.net or from your local kernel.org mirror at:

```
kernel.org/pub/linux/utils/kernel/hotplug/
```

They are required in order for udev to work properly.

If for some reason you do not install the hotplug scripts, you must tell the kernel to point the hotplug binary at wherever you install udev at. This can be done by:

```
echo "/sbin/udev" > /proc/sys/kernel/hotplug
```

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- Build the project:

```
make
```

Note:

There are a number of different flags that you can use when building udev. They are as follows:

`prefix`

set this to the default root that you want udev to be installed into. This works just like the 'configure --prefix' script does. Default value is ". Only override this if you really know what you are doing.

`USE_KLIBC`

if set to 'true', udev is built and linked against the included version of klibc. Default value is 'false'.

`USE_LOG`

if set to 'true', udev will emit messages to the syslog when it creates or removes device nodes. This is helpful to see what udev is doing. This is enabled by default. Note, if you are building udev against klibc it is recommended that you disable this option (due to klibc's syslog implementation.)

`USE_SELINUX`

if set to 'true', udev will be built with SELinux support enabled. This is disabled by default.

`DEBUG`

if set to 'true', debugging messages will be sent to the syslog as udev is run. Default value is 'false'.

`KERNEL_DIR`

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If this is not set it will default to `/lib/modules/`uname -r`/build`

This is used if `USE_KLIBC=true` to find the kernel include

directory that klibc needs to build against. This must be set

if you are not building udev while running a 2.6 kernel.

So, if you want to build udev using klibc with debugging messages, you

would do:

```
make USE_KLIBC=true DEBUG=true
```

- Install the project:

```
make install
```

This will put the udev binary in `/sbin`, create the `/udev` and `/etc/udev` directories, and place the udev configuration files in `/etc/udev`. You will probably want to edit the `*.rules` files to create custom naming rules. More info on how the config files are set up are contained in comments in the files, and is located in the documentation.

- Add and remove devices from the system and marvel as nodes are created and removed in `/udev/` based on the device types.

- If you later get sick of it, uninstall it:

```
make uninstall
```

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Things are still quite rough, but it should work properly. If nothing seems to happen, make sure your build worked properly by running the udev-test.pl script as root in the test/ subdirectory of the udev source tree.

Development and documentation help is very much appreciated, see the TODO file for a list of things left to be done.

Any comment/questions/concerns please let me and the other udev developers know by sending a message to the linux-hotplug-devel mailing list at:

`linux-hotplug-devel@lists.sourceforge.net`

greg k-h

`greg@kroah.com`

Util-Linux (v2.20.1):

`util-linux`

`util-linux` is a random collection of Linux utilities

Note that in years 2006-2010 this project used the name "util-linux-ng".

WEB PAGE:

<http://kernel.org/~kzak/util-linux/>

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MAILING LIST:

E-MAIL: util-linux@vger.kernel.org

URL: <http://vger.kernel.org/vger-lists.html#util-linux>

DOWNLOAD:

<ftp://ftp.kernel.org/pub/linux/utils/util-linux/>

SOURCE CODE:

Web interface:

<http://git.kernel.org/?p=utils/util-linux/util-linux.git>

Checkout:

```
git clone git://git.kernel.org/pub/scm/utils/util-linux/util-linux.git util-linux
```

NLS (PO TRANSLATIONS):

PO files are maintained by:

<http://translationproject.org/domain/util-linux-ng.html>

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NEUTRALITY:

The stuff in util-linux should be rather distribution-neutral.

No RPMs/DEBs/... are provided - get yours from your distributor.

VERSION SCHEMA:

Standard releases:

`<major>.<minor>[.<maint>[.<bugfix>]]`

major = fatal and deep changes

minor = typical release with new features

maint = maintenance releases; bug fixes only

bugfix = unplanned releases for critical/security bugs

Development releases:

`<major>.<minor>-rc<N>`

COMPILATION:

See the INSTALL file for more details.

Notes:

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* use SUID_CFLAGS and SUID_LDFLAGS when you want to define special compiler options for typical suid programs, for example:

```
./configure SUID_CFLAGS="-fpie" SUID_LDFLAGS="-pie"
```

This feature is currently supported for chfn, chsh, newgrp, write, mount, and umount.

STATIC LINKING:

Use `--enable-static-programs[=LIST]` configure option when you want to use statically linked programs.

Note, `mount(8)` uses `get{pw,gr}nam()` and `getpwuid()` functions for translation from username and groupname to UID and GID. These functions could be implemented by dynamically loaded independent modules (NSS) in your `libc` (e.g. `glibc`). These modules are not statically linked to `mount(8)` and `mount.static` is still using `dlopen()` like dynamically linked version.

The translation won't work in environment where NSS modules are not installed.

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For example normal system (NSS modules are available):

```
# ./mount.static -v -f -n -oid=kzak /mnt/foo  
  
LABEL=/mnt/foo on /mnt/foo type vfat (rw,uid=500)  
  
^^^^^^
```

and without NSS modules:

```
# chroot . ./mount.static -v -f -n -oid=kzak /mnt/win  
  
LABEL=/mnt/win on /mnt/win type vfat (rw,uid=kzak)  
  
^^^^^^
```

XML-RPC++ (v0.7):

```
#ifndef _XMLRPC_H_  
  
#define _XMLRPC_H_  
  
//  
  
// XmlRpc++ Copyright (c) 2002-2003 by Chris Morley  
  
// This library is free software; you can redistribute it and/or  
// modify it under the terms of the GNU Lesser General Public  
// License as published by the Free Software Foundation; either  
// version 2.1 of the License, or (at your option) any later version.  
//  
  
// This library is distributed in the hope that it will be useful,  
// but WITHOUT ANY WARRANTY; without even the implied warranty of  
// MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU  
// Lesser General Public License for more details.  
//  
  
// You should have received a copy of the GNU Lesser General Public
```

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```
// License along with this library; if not, write to the Free Software
// Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307
//

/* changed by ise GmbH 2013 */

#ifdef _MSC_VER
#pragma warning(disable:4786) // identifier was truncated in debug info
#endif

#ifndef MAKEDEPEND
#include <string>
#endif

#include "dllexport.h"
#include "XmlRpcClient.h"
#include "XmlRpcException.h"
#include "XmlRpcServer.h"
#include "XmlRpcServerProxy.h"
#include "XmlRpcServerMethod.h"
#include "XmlRpcValue.h"
#include "XmlRpcUtil.h"

namespace XmlRpc {
```

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//! An interface allowing custom handling of error message reporting.

```
class XMLRPC_DLLEXPORT XmlRpcErrorHandler {
```

```
public:
```

```
    //! Returns a pointer to the currently installed error handling object.
```

```
    static XmlRpcErrorHandler* getErrorHandler()
```

```
    { return _errorHandler; }
```

```
    //! Specifies the error handler.
```

```
    static void setErrorHandler(XmlRpcErrorHandler* eh)
```

```
    { _errorHandler = eh; }
```

```
    //! Report an error. Custom error handlers should define this method.
```

```
    virtual void error(const char* msg) = 0;
```

```
    //! Define virtual destructor to avoid compiler warnings
```

```
    virtual ~XmlRpcErrorHandler(){};
```

```
protected:
```

```
    static XmlRpcErrorHandler* _errorHandler;
```

```
};
```

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```
//! An interface allowing custom handling of informational message reporting.

class XMLRPC_DLLEXPORT XmlRpcLogHandler {

public:

    //! Returns a pointer to the currently installed message reporting object.

    static XmlRpcLogHandler* getLogHandler()

    { return _logHandler; }

    //! Specifies the message handler.

    static void setLogHandler(XmlRpcLogHandler* lh)

    { _logHandler = lh; }

    //! Returns the level of verbosity of informational messages. 0 is no output, 5 is very verbose.

    static int getVerbosity()

    { return _verbosity; }

    //! Specify the level of verbosity of informational messages. 0 is no output, 5 is very verbose.

    static void setVerbosity(int v)

    { _verbosity = v; }

    //! Output a message. Custom error handlers should define this method.

    virtual void log(int level, const char* msg) = 0;

    //! Define virtual destructor to avoid compiler warnings

    virtual ~XmlRpcLogHandler(){};
};
```

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protected:

```
static XmlRpcLogHandler* _logHandler;
```

```
static int _verbosity;
```

```
};
```

```
//! Returns log message verbosity. This is short for XmlRpcLogHandler::getVerbosity()
```

```
int XMLRPC_DLLEXPORT getVerbosity();
```

```
//! Sets log message verbosity. This is short for XmlRpcLogHandler::setVerbosity(level)
```

```
void XMLRPC_DLLEXPORT setVerbosity(int level);
```

```
//! Version identifier
```

```
extern const char XMLRPC_VERSION[];
```

```
} // namespace XmlRpc
```

```
#endif // _XMLRPC_H_
```

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Zlib (v1.2.6):

ZLIB DATA COMPRESSION LIBRARY

zlib 1.2.6 is a general purpose data compression library. All the code is thread safe. The data format used by the zlib library is described by RFCs (Request for Comments) 1950 to 1952 in the files <http://tools.ietf.org/html/rfc1950> (zlib format), rfc1951 (deflate format) and rfc1952 (gzip format).

All functions of the compression library are documented in the file `zlib.h` (volunteer to write man pages welcome, contact zlib@gzip.org). A usage example of the library is given in the file `test/example.c` which also tests that the library is working correctly. Another example is given in the file `test/minigzip.c`. The compression library itself is composed of all source files in the root directory.

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To compile all files and run the test program, follow the instructions given at the top of Makefile.in. In short `./configure; make test`, and if that goes well, `make install` should work for most flavors of Unix. For Windows, use one of the special makefiles in `win32/` or `contrib/vstudio/`. For VMS, use `make_vms.com`.

Questions about zlib should be sent to [<zlib@gzip.org>](mailto:zlib@gzip.org), or to Gilles Vollant [<info@winimage.com>](mailto:info@winimage.com) for the Windows DLL version. The zlib home page is <http://zlib.net/>. Before reporting a problem, please check this site to verify that you have the latest version of zlib; otherwise get the latest version and check whether the problem still exists or not.

PLEASE read the zlib FAQ http://zlib.net/zlib_faq.html before asking for help.

Mark Nelson [<markn@ieee.org>](mailto:markn@ieee.org) wrote an article about zlib for the Jan. 1997 issue of Dr. Dobb's Journal; a copy of the article is available at <http://marknelson.us/1997/01/01/zlib-engine/>.

The changes made in version 1.2.6 are documented in the file `ChangeLog`.

Unsupported third party contributions are provided in directory `contrib/`.

zlib is available in Java using the `java.util.zip` package, documented at <http://java.sun.com/developer/technicalArticles/Programming/compression/>.

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A Perl interface to zlib written by Paul Marquess <pmqs@cpan.org> is available at CPAN (Comprehensive Perl Archive Network) sites, including <http://search.cpan.org/~pmqs/IO-Compress-Zlib/> .

A Python interface to zlib written by A.M. Kuchling <amk@amk.ca> is available in Python 1.5 and later versions, see <http://docs.python.org/library/zlib.html> .

zlib is built into tcl: <http://wiki.tcl.tk/4610> .

An experimental package to read and write files in .zip format, written on top of zlib by Gilles Vollant <info@winimage.com>, is available in the contrib/minizip directory of zlib.

Notes for some targets:

- For Windows DLL versions, please see win32/DLL_FAQ.txt
- For 64-bit Irix, deflate.c must be compiled without any optimization. With -O, one libpng test fails. The test works in 32 bit mode (with the -n32 compiler flag). The compiler bug has been reported to SGI.
- zlib doesn't work with gcc 2.6.3 on a DEC 3000/300LX under OSF/1 2.1 it works when compiled with cc.

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- On Digital Unix 4.0D (formely OSF/1) on AlphaServer, the cc option `-std1` is necessary to get `gzprintf` working correctly. This is done by configure.
- `zlib` doesn't work on HP-UX 9.05 with some versions of `/bin/cc`. It works with other compilers. Use `"make test"` to check your compiler.
- `gzdopen` is not supported on RISCOS or BEOS.
- For PalmOs, see <http://palmzlib.sourceforge.net/>

Acknowledgments:

The deflate format used by `zlib` was defined by Phil Katz. The deflate and `zlib` specifications were written by L. Peter Deutsch. Thanks to all the people who reported problems and suggested various improvements in `zlib`; they are too numerous to cite here.

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Appendix: How to Apply These Terms to Your New Programs

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```
<one line to give the program's name and a brief idea of what it does.>  
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```

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```

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