

# **ANNEX**

## **COMMUNICATIONS SERVER**

### **R6.1**

## **Installation Notes**

**Read before installing and using Release R6.1 of the Annex  
Communications Server software**

These Installation Notes contain information specific to this release. This information is not available elsewhere in the Annex documentation.



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# Installation Notes

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## General

These installation notes are for R6.1 of the Annex Communications Server software distribution. It contains instructions for installing the software on a particular host and downloading the Annex with the necessary files. There are two types of files in the software distribution. One type of file resides on the Annex and gets downloaded from the installation host. The host must have enough memory to store these files and it must be able to run TFTP to download the files to the Annex. The other type of files are Annex tools which are compiled and run on the installation host. The host-resident Annex tools require a UNIX host with a C compiler and TCP/IP network protocols on which to compile and execute. Also, the Annex can be downloaded via one of its host-resident tools called `erpcd`.

This document contains the following sections:

- Preparation
- Host installation
- Annex installation
- Host-specific installation instructions
- List of files

Use these installation instructions either to install new Annexes or to update the operational code with a new release of software. If you are installing a new Annex, read all sections. For updating software, you need to read only the *Host Installation* section, and *Boot Procedures for Upgrading Software* (in the *Annex Installation* section). The *Annex Communications Server Network Administrator's Guide* provides instructions for installing optional software.

**Note:** These instructions cover software installation for all models of the Annex, including the Annex II, the Annex IIe, the Annex 3, and the Micro Annex. The term Annex refers to all models unless otherwise noted.

**Prerequisites:**

For TFTP: TCP/IP

For UNIX: TCP/IP; C compiler; standard UNIX utilities (see p. 5)

Host-resident Annex support utilities are:

<b>aprint</b>	The Annex printer utility (intended for sites that cannot modify the Berkeley spooler).
<b>ch_passwd</b>	The Annex user password change utility.
<b>erpcd</b>	The expedited remote procedure call daemon, which listens for Annex requests on a reserved UDP port (121). The daemon contains two programs: <b>bfs</b> , the block file server used by the Annex to access host-resident files; and <b>acp</b> , the Access Control Protocol (ACP) program that responds to host-based security requests.
<b>ien116d</b>	The IEN-116 name server.
<b>na</b>	The Annex Network Administrator utility
<b>rtelnet</b>	A pseudo-tty device create utility, which allows such UNIX programs as <b>tip</b> and <b>uucp</b> to access serial devices attached to Annex ports.
<b>timservr</b>	The time server that updates the Annex's time-of-day clock.

## Getting Files onto Your Host

After you have mounted the distribution media on the file server host, perform the following steps:

**Note:** If you have R6.0 and are installing R6.1, keep the two versions separate.

1. Create a directory to serve as the root of the Annex software tree if it does not already exist. For example:

```
# mkdir /usr/annex
```

2. Change to this directory. For example:

```
# cd /usr/annex
```

**Note:** If your implementation of *tar* does not create subdirectories automatically, see the BOM at the back of this document for the list of subdirectories that must be added manually before extracting the files from the disks.

3. Extract the contents from the source distribution using the following command:

```
# tar -xv
```

**Note:** If you are installing the operational code from floppy disks, execute this command for each disk.

Annex-UX R6.1 Host Utilities Installation Script

This installation shell script will examine your system and possibly ask you questions to generate the needed configuration to allow you to compile the Annex host utilities.

This script does not need to be run as root. In fact, it's best that you not run it as such. Only the installation process need to be run as root. You can abort the script at any time and restart it without any ill effects. Once install-annex completes the configuration section, you will only need to use

"make all" and "make install"  
from the src directory to later rebuild or re-install the utilities.

At any question prompt you can escape to a shell by typing "!". When you exit that shell you will bounce back to the question prompt. Many of the questions will have default answers in square brackets; typing carriage return will give you the default.

Type carriage return to continue. Your cursor should be here--> RET

At this point, pressing the **Return** key continues the installation script.

Beginning configuration.

Locating common programs...

ar is in /bin/ar.  
awk is in /bin/awk.  
cat is in /bin/cat.  
cc is in /bin/cc.  
chown is in /etc/chown.  
chmod is in /bin/chmod.  
cp is in /bin/cp.  
date is in /bin/date.  
echo is in /bin/echo.  
expr is in /bin/expr.  
grep is in /bin/grep.  
mkdir is in /bin/mkdir.  
mv is in /bin/mv.  
ranlib is in /usr/bin/ranlib.  
rm is in /bin/rm.  
sed is in /bin/sed.

Don't worry if any of the following aren't found...

inetd is in /etc/inetd.  
I don't see pack out there, offhand.  
strip is in /bin/strip.

```
Checking your system for these functions...
#include <sys/types.H> ok
#include <netinet/in.h> ok
bcopy () ok
bzero () ok
dup2 () ok
gethostbyname () ok
gethostbyaddr() ok
gethostname () ok
getservbyname () ok
htonl () ok
htons () ok
ntohl () ok
nthos () ok
inet_addr () ok
inet_ntoa () ok
recvfrom () ok
recvmsg () ok
sendmsg () ok
sendto () ok

index ok
rindex ok
select ok
u_char ok
u_short ok
u_long ok
hostent ok
servent ok
```

If your operating system is a UNIX System V, the script asks what type of networking software you have before it displays the install and build messages. It may ask additional questions, depending on your machine type and networking software. For assistance with installing the Annex software on some specific System V hosts, refer to the section *Host-specific Installation Instructions*.

Next, the script asks you where to install the Annex utilities and the Annex **man** pages. You have several location options for installation of **man** pages, based on the type of system you have; you also have the option of not installing **man** pages.

**Note:** If installing a Generic System V R4, there is a problem attempting to install the **man** pages. We recommend that you select the option to *not* install **man** pages and, if the **man** pages are desired, that you install them separately once the Annex install is completed.

**Note:** If installing an NCR 3000 system, you should verify that the system includes a `telnet.h` file. Some NCR 3000 systems may fail during the build due to the location of `telnet.h`. If this occurs, copy `/usr/include/netinet/telnet.h` to `/usr/include/arpa/telnet.h` and *remake*.

```
Where do you want the annex utilities installed?[/usr/annex] /etc 
```

```
What kind of on-line manual page layout do you have?
Select the most appropriate on-line manual page layout:
```

1. v7/BSD (/usr/man/man?)
2. SystemV (/usr/{catman,man}/[apu]\_man/man?)
3. None (don't install on-line manual pages automatically)

```
Enter on-line manual page type #: [1] 
```

If you answer **y**, the following is displayed:

```
Installing the tools; output being saved in "Install.out"
*** Installing Annex-UX R6.1 images ***
:
*** Installing aprint ***

Done.
```

If you did not compile and install the tools, the following is displayed:

```
Installation not completed.
To compile the tools use "cd src ; make"
To install the tools and manual pages use "cd src ; make install"

Done.
```

At this point the installation procedure is complete. If you need to rebuild or reinstall the Annex software in the future, you need to run only **make** and **make install** from the **src** directory.

## Host Server Set-up Procedures

A new Annex requires the following edits to host files on the file server before downloading software:

1. Add the following line to **/etc/services** to define a UDP port for the **erpcd** daemon:

```
erpc      121/udp      # rpc listener
```

**Note:** Perform this step *only* if you have an **/etc/services** file on your system.

2. Verify that the following line, required by the Annex **aprint** utility, is in the **/etc/services** file:

```
printer  515/tcp    spooler    # line printer spooler
```

3. If you are installing software on a host running Sun Microsystem's (formerly Networking Information Services), you must re-initialize the yellow pages database before any changes to **/etc/services** take effect.

Collect information for the Annex boot parameters:

- Where are the download files on the host (TFTP only)?
- Are the Annex and host on the same subnet or are they separated by a gateway?
- Are the Annex and host connected by serial ports using the Serial Line Internet Protocol (SLIP)?
- Is the host going to use TFTP or ERPC (requires UNIX host) to serve the Annex download code?

The Annex needs these parameters to perform an initial boot when loading the software. Enter these parameters into the Annex's EEPROM using the ROM monitor commands, which are accessed through the Annex Console.

The following manuals contain information on connecting a terminal for use as the Annex Console and details on the ROM Monitor commands:

- *Annex II Communications Server Hardware Installation Guide*
- *Annex Iie Communications Server Hardware Installation Guide*
- *Annex-802.5 Communications Server Hardware Installation Guide*
- *Annex 3 Communications Server Hardware Installation Guide*
- *Micro Annex Communications Server Hardware Installation Guide*

The boot procedures for a new Annex are:

1. Set the Annex's Internet address and other initial boot parameters with the ROM monitor. Refer to Chapter 3, *ROM Monitor Commands*, in the appropriate hardware guide.
2. For the Annex 3 and the Micro Annex, which power up automatically in NORMAL mode, press the **Test** switch on the front panel *within 30 seconds of power up* to enter TEST mode.

For all other Annex models, set the NORMAL/DIAG switch on the rear panel of the Annex to the DIAG position.

3. At the Annex Console (the terminal attached to Port 1), enter the **boot** command:

```
monitor:: boot
```

## **Host-specific Installation Instructions**

This section provides installation instructions for the following manufacturers:

- Tahoe (CCI Power 6/32)
- Convergent
- Xenix PC
- ARIX 825
- ARIX/CMC
- Bull
- SCO TCP/IP
- SCO UNIX

The following instructions have been tested on the hardware platforms and operating system software listed under each manufacturer. These instructions are not guaranteed to work since they are not tested for every release of Annex software nor for every version of OS that runs on these machines.

Determine whether or not your host has an alternate include directory for the network code and, if so, where it is located. Also, locate the directory in which the include files reside.

### **Tahoe (CCI Power 6/32)**

To install the Annex distribution software on the above system, perform the following steps:

**Step 1.** Run the `install-annex` script. Answer the following questions as noted:

```
Enter Machine Type #: TAHOE
```

**Step 2.** From this point, select the appropriate OS and network software.

**Step 1.** Run the `install-annex` script. Answer the following questions as noted:

Enter Machine Type #: `GENERIC`

Enter OS #: `SYSTEM V UNIX (& UMAX V)`

Enter Net S/W Type #: `EXOS`

Does your system have any auxiliary libraries for the network code? [n] `y`

Enter any additional loader options for the network libraries  
`-lsocket -lnfs.c`

Does your system have an alternate include directory for network code [n]?  
`y`

Where are the network include files located?  
`/usr/include/EXOS`

**Step 2.** Do not compile the tools at the end of the installation script. That is, answer `n` to the following question:

Shall I compile the tools for you? [y] `n`

**Step 3.** Copy:

`/usr/include/sys/time.h`

to:

`src/inc/sys/time.h`

**Step 4.** Copy:

`/usr/include/rpc/netdb.h`

to:

`src/inc/rpc/netdb.h`

**Step 5.** Then, edit the copy of the `netdb.h` file to comment out the definitions of `servent` and `hostent`.

**Step 4.** Copy the file `/usr/include/sys/socket.h` to `src/inc/sys/socket.h`. Edit this new file and change:

```
/*
 * Message header for recvmsg and sendmsg calls.
 */
struct msghdr {
    caddr_t    msg_name;        /* optional address */
    int        msg_namelen;     /* size of address */
    int        msg_base;        /* base address of data */
    int        msg_len;         /* size of data */
    caddr_t    msg_accrightrights; /* access rights sent/received */
    int        msg_accrightrightslen;
};
```

to:

```
#ifndef          NOTDEF
/*
 * Message header for recvmsg and sendmsg calls.
 */
struct msghdr {
    caddr_t    msg_name;        /* optional address */
    int        msg_namelen;     /* size of address */
    int        msg_base;        /* base address of data */
    int        msg_len;         /* size of data */
    caddr_t    msg_accrightrights; /* access rights sent/received */
    int        msg_accrightrightslen;
};
#endif
```

**Step 5.** Compile and install `erpcd`:

```
#cd src
#make
#make install
```

**Step 6.** Edit `src/inc/config.h` file again to remove the following lines:

```
#define need_sendto
#define sendto xylo_sendto
```

**Step 7.** Compile and install `na`:

```
# cd src/na
# make -f ../make.config -f Makefile install
```

**Step 4.** Change the following line in the `src/make.config` file from:

```
CFLAG=
```

to:

```
CFLAG=-D_SYSV
```

**Step 5.** Compile and install the tools:

```
#cd src
#make
#make install
```

## SCO TCP/IP

The following set of instructions were tested using a Compaq 386/20 portable and the Xenix System V Version 2.3.2 (for Intel 80386) operating system software. These instructions are not guaranteed to work with all TCP/IP packages; refer to the accompanying manuals for the package you are using for more information.

Install the Annex distribution software by perform the following steps:

**Step 1.** Run the `install-annex` script. Answer the following questions as noted:

```
Enter Machine Type #:  GENERIC
```

```
Enter OS #:  SYSTEM V UNIX (& UMAX V)
```

(Do not use XENIX System V)

```
Enter Net S/W Type #:  4.[234]BSD
```

```
Does your system have any auxiliary libraries for the network
code?[n]  y
```

```
Enter any additional loader options for the network libraries
-lsocket
```

```
Does your system have an alternate include directory for network
code[n]?
```

```
n
```

```
#include <stdio.h>

xylo_fprintf(chan, f, a1a, a2, a3, a4, a5, a6, a7, a8, a9,
             a10, a11, a12, a13, a14, a15, a16, a17, a18, a19, a20)
unsigned long chan;
{
    unsigned long newchan;

    newchan == chan;
    if(chan == ((unsigned int)stdout - 2)) newchan = stdout;
    if(chan == ((unsigned int)stderr - 4 )) newchan = stderr;

    return fprintf(newchan, f, a1a, a2, a3, a4, a5, a6, a7, a8, a9, a10,
                  a11, a12, a13, a14, a15, a16, a17, a18, a19, a20);
}
```

**Step 6.** Place the above routine in the `src/libannex/fprintf.c` file. Change the following lines in the `src/make.config` file from:

```
LIBANX_C=erpc_subr.c srpc.c api_if.c crypt.c
LIBANX_O=erpc_subr.o srpc.o api_if.o crypt.o
```

to:

```
LIBANX_C=erpc_subr.c srpc.c api_if.c crypt.c fprintf.c
LIBANX_O=erpc_subr.o srpc.o api_if.o crypt.o fprintf
```

You must compile the `src/libannex/fprintf.c` file without the `-pack` flag, by editing the `src/libannex/Makefile` file. After these lines:

```
clean:
    ${RM} -f $(LIBANX_O)
    ${RM} -f libannex.a
```

add the following lines:

```
fprintf.o: fprintf.c
    ${CC} -c fprintf.c
```

Finally, you need to force the software to use the modified routine instead of the standard routine, by adding the following line to the head of the `src/inc/config.h` file:

```
#define    fprintf    xylo_fprintf
```

## SCO UNIX

The following set of instructions were designed to work with SCO UNIX. Since there are many versions of SCO UNIX, these installation notes may not work with your version.

Install the Annex distribution software by performing the following steps:

**Step 1.** Run the `install-annex` script. Answer the following questions as noted:

```
Enter Machine Type #:  GENERIC
```

```
Enter OS #:  SYSTEM V UNIX (& UMAX V)
```

```
Enter Net S/W Type #:  4.[234]BSD
```

```
Does your system have any auxiliary libraries for the network  
code?[n]  y
```

```
Enter any additional loader options for the network libraries  
-lsocket -lnls -lnsl_s
```

```
Does your system have an alternate include directory for network  
code?[n]?  
n
```

**Step 2.** Do not compile the tools at the end of the installation script. Answer `n` to the following question:

```
Shall I compile the tools for you?[y]  n
```

**Step 3.** SCO UNIX requires special compiler flags. To use these flags, change the following line in the `src/make.config` file from:

```
CFLAG= -DINETD -DGENERIC -DSYS_V -I../inc
```

to:

```
CFLAG= -DLAI_TCP -pack -Di386 -DINETD -DGENERIC -DSYS_V -I../inc
```

**Step 7.** SCO UNIX refers to the devices over which communications is established as `/dev/inet/tcp` and `/dev/inet/udp`. The following changes must be made to `src/libannex/api_if.c`:

```
#define TLI_TCP = "/dev/tcp"
#define TLI_UDP = "/dev/udp"
```

to:

```
#define TLI_TCP = "/dev/inet/tcp"
#define TLI_UDP = "/dev/inet/udp"
```

**Step 8.** In the file `src/make.config` change the following lines from:

```
LIBANX_C = erpc_subr.c srpc.c api_if.c sendrecv.c
LIBANX_O = erpc_subr.o srpc.o api_if.o sendrecv.o
```

to:

```
LIBANX_C = erpc_subr.c srpc.c sendrecv.c api_if.c crypt.c fprintf.c
LIBANX_O = erpc_subr.o srpc.o sendrecv.o api_if.o crypt.o fprintf.o
```

And change:

```
RANLIB = /bin/ranlib
```

to:

```
RANLIB = /bin/ar t
```

because `/bin/ranlib` behaves as if it is broken.

**Step 9.** Copy `/usr/include/sys/socket.h` to `../src/inc/sys/socket.h`. Edit `socket.h` to include the following two lines at the end of the `msg_hdr` structure:

```
struct iovec *msg_iov;          /* scatter/gather array */
int msg_iovlen;                /* # elements in msg_iov */
```

**Step 10.** Compile the tools:

```
#cd src
#make
```

**Step 11.** If everything compiles:

```
#make install
```

## List of Files

The following files are distributed with the release media:

bfs/oper.16.enet	1161 blocks
bfs/oper.42.enet	1261 blocks
bfs/oper.52.enet	1214 blocks
install-annex	86 blocks
man/cat/aprint.1	11 blocks
man/cat/erpcd.8	13 blocks
man/cat/eservices.5	4 blocks
man/cat/gateways.5	19 blocks
man/cat/na.8	3 blocks
man/cat/rotaries.5	13 blocks
man/cat/rtelnet.8	13 blocks
man/cat/timserver.8	3 blocks
man/src/aprint.1	9 blocks
man/src/erpcd.8	10 blocks
man/src/eservices.5	4 blocks
man/src/gateways.5	13 blocks
man/src/na.8	3 blocks
man/src/rotaries.5	10 blocks
man/src/rtelnet.8	9 blocks
man/src/timserver.8	3 blocks
release	1 blocks
src/aprint/Makefile	4 blocks
src/aprint/aprint.c	29 blocks
src/aprint/aprint.h	4 blocks
src/aprint/parsecap.c	15 blocks
src/erpcd/Makefile	6 blocks
src/erpcd/acp.c	19 blocks
src/erpcd/acp.h	14 blocks
src/erpcd/acp_lib.c	27 blocks
src/erpcd/acp_policy.c	75 blocks
src/erpcd/acp_policy.h	10 blocks
src/erpcd/acp_rpc.c	20 blocks
src/erpcd/annex-initd	3 blocks
src/erpcd/bfs.c	66 blocks
src/erpcd/ch_passwd.c	12 blocks
src/erpcd/erpcd.c	34 blocks
src/erpcd/eservices	1 blocks
src/erpcd/getacppw.c	6 blocks
src/erpcd/policy.doc	44 blocks
src/ien-116/Makefile	3 blocks
src/ien-116/ien116d.c	11 blocks

src/na/do.c	70 blocks
src/na/main.c	16 blocks
src/na/oem.h	1 blocks
src/na/parse.c	116 blocks
src/na/sub.c	23 blocks
src/na/vers.c	1 blocks
src/netadm/Makefile	10 blocks
src/netadm/boot.c	13 blocks
src/netadm/broadcast.c	8 blocks
src/netadm/dumpboot.c	7 blocks
src/netadm/get_anx_opt.c	5 blocks
src/netadm/get_anx_rev.c	6 blocks
src/netadm/get_da_param.c	7 blocks
src/netadm/get_da_stat.c	7 blocks
src/netadm/get_ln_param.c	8 blocks
src/netadm/get_ln_stat.c	8 blocks
src/netadm/get_port_cnt.c	6 blocks
src/netadm/get_port_eib.c	5 blocks
src/netadm/get_test.c	2 blocks
src/netadm/get_tr_cnt.c	5 blocks
src/netadm/init_socket.c	7 blocks
src/netadm/netadm.h	6 blocks
src/netadm/netadm_err.h	7 blocks
src/netadm/read_memory.c	9 blocks
src/netadm/reset_all.c	6 blocks
src/netadm/reset_annex.c	6 blocks
src/netadm/reset_line.c	7 blocks
src/netadm/return_param.c	13 blocks
src/netadm/rpc.c	38 blocks
src/netadm/set_da_param.c	13 blocks
src/netadm/set_inet_add.c	7 blocks
src/netadm/set_ln_param.c	11 blocks
src/netadm/set_test.c	2 blocks
src/netadm/verify_resp.c	7 blocks
src/rtnet/Makefile	4 blocks
src/rtnet/rtnet.c	63 blocks
src/rtnet/rtnet.seq	67 blocks
src/rtnet/rtnet.smns	62 blocks
src/slird/Makefile	4 blocks
src/slird/slirdcfg	1 blocks
src/slird/slird.c	30 blocks
src/slird/stty.c	11 blocks
src/snmp/annex-mib.txt	18 blocks
src/snmp/mib.txt	56 blocks
src/timserver/Makefile	4 blocks
src/timserver/timserver.c	11 blocks

Total = 5909 blocks