

FACTS

Chris Young

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COLLABORATORS

	<i>TITLE :</i> FACTS		
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REVISION HISTORY

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Chapter 1

FACTS

1.1 Welcome to FACTS...

FACTS 2.7 (26.05.99)

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UNSATISFACTORY SOFTWARE INTRODUCES NEW ANINC(TM) TECHNOLOGY!

WHAT THE HELL IS ANINC?!

***DISCLAIMER* * SECURITY ***

Introduction Installation

Requirements Distribution

New Users

Getting Started

Example Configuration

Clock Synchronisation

Reference and Information

The GUI - A reference guide to the gadgets and menus

Servers - Some public access NTP servers

AutoDST - The other reason to use FACTS

FAQs - Frequently Anticipated Questions

Known Bugs - Things to watch out for

Technical Details

Tooltypes Env-vars

ARexx CLI Usage

CX Exchange Messages

Year 2000 NTP Clock Synchronisation

General

History Future

Thanks Contact

1.2 disclaimer

FACTS has been proven to be stable, but all use is at your own risk. It shouldn't cause a nuclear war, give you food poisoning or destroy any data. In the unlikely event that it does anything nasty or undocumented, I'm afraid I cannot and will not accept any responsibility for the events that happen.

In particular, if FACTS manages to de-synchronise the entire network of NTP servers, then I will deny all knowledge of its existence.

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1.3 security

After the bogus datatypes.library last year, which was illegally extracting passwords from Miami files, I feel compelled to assure you that FACTS does not have any security loopholes or backdoors.

FACTS does a small number of HTTP requests, which communicate with the servers named "www.eecis.udel.edu", "uk.aminet.net" and "www.unsatisfactory.freemove.co.uk". Most servers will log all HTTP accesses with any information available. The only thing logged which is directly sent by FACTS, is a "User-Agent" string containing "FACTS/x.x bsdsocket.library/x.x (AmigaOS)". Of course, if you don't believe me, you can ask the nice chaps at SunSITE Northern Europe and UDEL to show you their logs (oo-er).

The access to my server is for the MOTD file, and I currently have no access to the log files.

Of course, by mentioning this I've probably made everybody suspicious.

1.4 Introduction: The facts about FACTS!

FACTS. What is it?

Quite simply, the only GUI-based SNTP clock synchronisation program available for the Amiga.

SNTP is a Simple version of the Network Time Protocol, which is used by servers across the Internet to keep time accurate within picoseconds.

FACTS logs on to one of these servers, and sets your system time and battclock to the correct time. It can also adjust your clock automatically when DST comes into effect.

And it's FREE. What more could you want?

Why did you write it?

Because the only time synchronisation programs available either:

- a) didn't work
- b) didn't have a GUI
- c) didn't have many features
- d) all of the above

And they all seemed to use the virtual TCP: device, along with the daytime protocol. This meant that they wouldn't be terribly accurate, wouldn't work with all NTP servers (FreeServe's one, for example, doesn't support daytime) and wouldn't work with all TCP stacks. Also, it seems silly to run two programs (a time synchroniser and a DST program), when the two could easily be combined into one package.

FACTS aims to be the most configurable and most compatible SNTP client for the Amiga. It should work with any version of Workbench from 2.04 (even the older 2.0x [v36] releases may be able to run FACTS), with any AmiTCP 4 (bsdsocket.library) compatible TCP/IP stack and with any NTP server, using any service on any port number. I hope.

If you have any problems, queries, questions or comments, [just ask!](#)

1.5 requirements

Workbench 2.04 or higher, with ARexx active.

An AmiTCP 4 compatible TCP/IP stack is highly recommended, unless you plan to only use FACTS to adjust DST automatically.

1.6 installation

Please use the supplied script. It won't (unless I've done something wrong) overwrite your existing tooltypes when updating FACTS.

If you are on a new installation, please read [syncing the clock](#)

1.7 distribution

FACTS is FREEWARE. This means that it remains fully copyrighted to me, but can be freely distributed as long as the code is not modified and no money is charged (except a small fee for handling).

If you put FACTS on a COMMERCIAL CD (excluding Aminet CDs and magazine coverdiscs), you must notify me. In particular, I would appreciate a copy of the CD in question - if you are trying to make money out of something I have created, then I think I should get something out of it as well. This isn't a requirement, just a suggestion...

1.8 Graphical User Interface

Project Settings Special

```

[] _____ []
|
|
| Server: Check |
| Amiga: Adjust |
| Diff: |
| Addr: : Def |
| Timezone: ±hrs DST |
|_____|

```

FACTS has a GadTools-based font sensitive GUI. In the "accepted" fashion (ie. everybody else seems to do this, even though it looks terrible), I've recreated the GUI in pure ASCII. Click on the gadgets and menus to find out what everything does.

Please use this section as a reference guide only: if you are new to FACTS, you should read the [getting started](#) and [example config](#) sections first.

1.9 Window Close Gadget

Hides the GUI, but does not quit FACTS.

1.10 Window Back Gadget

It is assumed that you know the basics of how to manipulate Workbench windows...

1.11 Server: field

This shows the time on the selected NTP server, at the time it was retrieved.

1.12 Amiga: field

This shows the system time as it was before FACTS changes it.

1.13 Diff: field

This shows the difference between your system time, and the time on the selected server.

1.14 Addr: gadget

Type the IP address or Internet name for a (preferably local) NTP server. A list of public access servers can be found [here](#) .

1.15 Port: gadget

This is the TCP or UDP port number for the selected [service](#) .

Defaults to standard ports:

daytime: 13

time : 37

sntp : 123

(note that these are hard-coded defaults and not taken from the TCP/IP stack's database)

1.16 Timezone: gadget

This is a three character ID string for your timezone. Defaults to "UTC".

Examples:

GMT - Greenwich Mean Time

MET - Mid European Time

PST - Pacific Standard Time

1.17 \pm hrs: gadget

This should be set to the number of whole hours you are east of GMT.

If you are behind GMT, then this number will be negative!

If you live in a timezone which has a half-hour offset, please also set

[Extra Half Hour](#) in the [Settings](#) menu.

1.18 DST: checkbox

This should be checked if you are currently in summertime, unchecked otherwise. Please also see AutoDST.

1.19 DST: gadget

This is a four character ID string for your DST (summertime) name. If your zone uses a name less than four characters, it will be padded out with spaces. Defaults to "DST "

Examples:

BST - British Summer Time

EDST - Eastern Daylight Saving Time

1.20 Int: gadget

Setting this to a positive integer will activate FACTS' Time INterval check option. Every n seconds, FACTS will attempt to make a connection to the specified server and set your clock using the settings specified in the **Write Time To** menu.

This is probably most useful for permanent network connections, or if you do not have the ability to automatically run a script when connecting to a dial-up Internet provider.

Defaults to "0" (do not autocheck)

1.21 Adjust: button

Clicking this will cause FACTS to log on to the **specified server** and set your system time or BattClock according to the settings in the **Write Time To** menu.

1.22 Check: button

Clicking this will cause FACTS to log on to the specified server and display the current time on both the server and your Amiga, and the time difference between the two. Please use this to test different settings and servers.

1.23 Def[ault Port] Checkbox

When ticked, FACTS will connect to the default port number for the **specified service** .

The default port numbers are verified with your TCP/IP stack on startup.

1.24 Project Menu

Project Settings Special

Server Info...

Version/MOTD...

About...

Hide

Quit...

1.25 Menu Separator Bar

This is only a button for cosmetic purposes.

1.26 Project: Server Info...

This displays up to two requesters showing information about the current server:

NTP Server Information (only displays after time has been obtained)

Published Inforamtion

1.27 NTP Server Information

The first server information requester displays the following - most of the information is only available if using the SNTP service.

IP Address

This is the Internet address of the polled server

Stratum sntp only

This is the server's stratum (lower stratum servers are more accurate)

Reference sntp only

This indicates the synchronisation source for the polled server. For Stratum 0 and 1 servers, it will be a four-character ID string. For other stratum it will be the IP address of the server.

Precision sntp only

Indicates the precision of the server (as 2^x seconds). -6 is the precision of mains frequency clocks, lower numbers are more accurate.

Poll Interval sntp only

This shows the minimum poll interval (in seconds) for the polled server. (This is for information only, and has no bearing on FACTS)

Root Delay sntp only

This indicates the "total roundtrip delay to the primary reference source" (whatever that means)

Root Dispersion sntp only

This shows the maximum error (in seconds) relative to the primary reference source.

Leap Second sntp only

This only shows if there is an extra second to be added or removed at the end of the current day. FACTS does not currently act on this information.

ALARM! sntp only

This shows that the server is currently not synchronised or has not been synchronised within the last 24 hours. If a server reports this, FACTS will not set your computer clock. (facts also reports "alarm condition" in the server display)

Published Information...

1.28 Published Information: Public NTP Servers; Stratum 1 & 2

This requester requires you to have the Public NTP Server lists, in their original (HTML) form. FACTS will check to see if you have them, and ask to download if you don't. It is advisable to keep these lists up-to-date, and FACTS will attempt to check if newer lists are available. You can also select the **Download Databases** item to do so. FACTS will not download files which are the same as those already on your hard drive.

The files are as follows:

<http://www.eecis.udel.edu/~mills/ntp/clock1.htm> (Stratum 1 Servers)

<http://www.eecis.udel.edu/~mills/ntp/clock2.htm> (Stratum 2 Servers)

Note that FACTS is not able to tell if the files have been updated or not unless it was FACTS which downloaded them originally.

It is advisable to read the introductory text at

<http://www.eecis.udel.edu/~mills/ntp/servers.htm>

Any errors in the files should be sent to David Mills <mills@udel.edu>, after checking with NTP Admin. Do not send corrections to me.

FACTS uses the currently-selected NTP server to search the database, therefore the information on the first "Server Info" requester may not correspond to that on the second. Please note that the database search is case sensitive - this generally means that you should type addresses in lower case letters, else FACTS will not be able to find it.

FACTS can also search on IP addresses and CNAMEs.

FACTS also expects the data to be in a specific format: it is not an HTML document viewer, and will only strip out tags that it expects to see. Therefore, you may see other HTML tags in the text, which are generally links.

Any change in format on the server information documents is likely to stop this requester working, and is beyond my control. Please tell me if you notice that the format has changed.

The data shown will contain some or all of the following fields:

server address (IP address)

Location: physical location of server

Geographic Coordinates: geographic coordinates

Synchronization: synchronisation source for the server

Service Area: suggested area which the server covers

Access Policy: please respect the access policy (use open access only)

Contact: contact name and e-mail of person responsible

Note: additional notes

1.29 Project: Version/MOTD...

Selecting this item will attempt to log on to these servers and obtain the information shown:

uk.aminet.net - will check to see if a new version of FACTS is available.

www.unsatisfactory.freeserve.co.uk - gets the MOTD file, which may contain important information (currently only about FACTS)

1.30 Project: About...

Shows some program information, including the dates of your data files (if available)

1.31 Project: Hide

Closes the GUI, but does not quit FACTS. The GUI may be re-opened by pressing the current **hotkey** or by using the Commodities Exchange

1.32 Project: Quit...

After confirmation, this will close the GUI and completely remove FACTS from memory.

1.33 Settings Menu

Project Settings Special

Write Time To »

Auto DST »

Ignore TZ Changes

Service »

Timeserver Offset »

Check On Startup

Aninc On Error

Compatibility

AppMenu Item

Extra Half Hour

Save Settings

1.34 Settings: Write Time To

This selects where FACTS should write the time to after obtaining it.

Available settings are:

System

This writes the time to the system, and will be lost after a reboot.

BattClock

This writes the time to a battery backed-up clock, which will survive a reboot.

The actual setting you choose here will depend on your circumstances.

Please see [example configurations](#) and [known bugs](#)

1.35 Settings: Auto DST

A feature of FACTS is its ability to switch between summer and winter time.

It can alter none, some or all of the following automatically:

* TZ env-var

* System time

* BattClock time

It can also indirectly modify other programs, if any of the following is true:

* The program checks the TZ env-var for DST (this is what FACTS does)

* The program supports SummertimeGuard (only if STG emulation is on)

The only program I know of which supports any of the above is the mailer YAM2 (see <http://www.yam.ch>), which supports STG.

However, what the author of STG doesn't tell you, is that if you stop using it, YAM (and any other program which supports it) will still think you are using it.

FACTS actually suffers from the same fate. However, if you DISABLE the emulation, it will delete the appropriate files and YAM will let you change the setting manually again.

It is important to always DISABLE STG emulation if you stop using FACTS or only use it from the command line (running FACTS from the CLI never emulates

STG)

Please note that the file written by FACTS may not be exactly the same as one written from STG. FACTS also writes a country code of "NT" (for "Network Time", nothing to do with a version of the "popular" OS), which can potentially confuse some programs. Also note that FACTS never reads the file, and you can't use STG to change the DST state, and expect FACTS to pick up on this and correct the TZ env-var. (why would you want to run STG AND FACTS at the same time anyway?)

The following countries are supported by AutoDST:

Australia (Sydney/Melbourne)

DST Starts: Last Sunday in October, at 2:00

DST Ends: Last Sunday in March, at 2:00

Tasmania/New South Wales

DST Starts: First Sunday in October, at 2:00

DST Ends: Last Sunday in March, at 2:00

Azerbaijan

DST Starts: Last Sunday in March, at 1:00

DST Ends: Last Sunday in October, at 1:00

Brazil

DST Starts: Second Sunday in October, at 0:00

DST Ends: Third Sunday in February, at 0:00

Canada/Thule/Newfoundland/Mexico/Bahamas

DST Starts: First Sunday in April, at 2:00

DST Ends: Last Sunday in October, at 2:00

Chile

DST Starts: Second Sunday in October, at 0:00

DST Ends: Second Sunday in March, at 0:00

Cuba/Turks/Caicos

DST Starts: First Sunday in April, at 0:00

DST Ends: Last Sunday in October, at 0:00

Egypt

DST Starts: Fourth Saturday in April, at 0:00

DST Ends: Last Friday in September, at 23:00

Western Europe/UK

DST Starts: Last Sunday in March, at 1:00

DST Ends: Last Sunday in October, at 2:00

Central Europe

DST Starts: Last Sunday in March, at 2:00

DST Ends: Last Sunday in October, at 2:00

Falklands

DST Starts: Second Sunday in September, at 0:00

DST Ends: Third Sunday in April, at 0:00

Fiji

DST Starts: First Sunday in November, at 2:00

DST Ends: Last Sunday in February, at 3:00

Jordan

DST Starts: First Saturday in April, at 0:00

DST Ends: Third Saturday in September, at 0:00

Lebanon/Mongol

DST Starts: Last Sunday in March, at 0:00

DST Ends: Last Sunday in September, at 0:00

New Zealand

DST Starts: First Sunday in October, at 2:00

DST Ends: Third Sunday in March, at 2:00

Paraguay

DST Starts: First Sunday in October, at 0:00

DST Ends: Last Sunday in February, at 0:00

Russia/Asia/Kirgizstan

DST Starts: Last Sunday in March, at 2:00

DST Ends: Last Sunday in October, at 2:00

United States of America

DST Starts: First Sunday in April, at 2:00

DST Ends: Last Sunday in October, at 2:00

Zion

DST Starts: First Saturday in April, at 2:00

DST Ends: First Saturday in Septemeber, at 2:00

Custom

Uses the settings specified in [tooltypes](#)

Note that half-hour adjustments/time checks, and absolute dates, are not currently supported. DST rules which use a different calendar will probably never be supported.

If your country isn't here, or the above is wrong, please send me the information required.

Please note that FACTS checks for DST on startup, and every hour thereafter.

Even if you never reboot your machine, DST should still auto-adjust!

1.36 Settings: Ignore TZ Changes

FACTS usually adjusts the time when the timezone information on the GUI, or the **TZ variable** is changed. Setting this will cause FACTS to leave the time as it is.

1.37 Settings: Service

FACTS can obtain the current time through a number of different services. The menu options are listed in order of preference, and not all servers support all services.

sntp

This is Simple Network Time Protocol, a subset of the full NTP specification. All NTP servers support this - if a server does not support this service, then it is almost certainly not linked to the rest of the NTP network, and accuracy cannot be guaranteed! FACTS attempts to synchronise your clock as accurately as possible. Maximum accuracy for system time is $1\mu\text{s}$ (1 millionth of a second), although due to program execution time this will lag behind by up to 20ms - still easily accurate enough for most people! The BattClock, however, can only handle accuracy of one second.

(standard port: 123)

time/udp

The time protocol does not return time as accurately as SNTP, and does not require any extra information about synchronisation. Can be used to sync to a non-NTP machine on a local network. Accuracy to one second.

(standard port: 37)

time/tcp

As time/udp, but uses the TCP protocol instead of UDP. Use this if your network blocks UDP calls. Accuracy to one second.

(standard port: 37)

daytime

This returns time in a human-readable format, and in the local timezone instead of as UTC. Because of this, it takes time for FACTS to parse the data and is not as accurate as the other services. Do not use this unless you absolutely have to!

(standard port: 13)

1.38 Settings: Timeserver Offset

For the use of the **daytime** service only, this specifies which timezone the server is in.

1.39 Settings: Check On Startup

When checked, FACTS will attempt to obtain and set your clock as soon as it starts up.

1.40 Settings: Compatibility

These options can correct various **date overflow** problems.

2036 Mode

Enable: After Feb 6, 2036

Effect: Corrects obtained times to show 2036 instead of 1978

Reason: sntp/time overflows on Feb 6 2036

2015 Is Two Digit Base

Enable: 2078 (after 2015 is safe!)

Effect: Adds 100 years onto times obtained through **daytime**

Reason: Ensures FACTS will interpret **daytime** two-digit dates properly

BattClock 2078

Enable: 2078

Effect: Will adjust the system time forward 100 years on startup

Reason: The BattClock only stores two-digit dates

1.41 Settings: AppMenu

This adds a "Set Time" option to the Workbench Tools menu.

1.42 Settings: Aninc On Error

Setting this will enable FACTS 2.7's new Aninc(tm) technology. This enables

FACTS to try an alternative local server if a request to the specified one

fails - without you needing to type in another address!

Please read **how does Aninc work?** before enabling this.

1.43 What the FACTS (I said FACTS) is Aninc?! How does it work?

Aninc(tm) technology is Unsatisfactory Software's amazing new invention for

FACTS 2.7. It basically allows FACTS to check an alternative local server

if a request to the specified one fails - without you even needing to know

the address!

How it works

Aninc(tm) is possible due to the following:

* A lot of sites have more than one NTP server, to allow NTP clients to peer with several servers on the same network.

* Due to the fact the servers are on the same network, they all have the same domain name and are all guaranteed to be local to each other (ie. one server should respond as quickly as another)

* The actual machine names are (obviously) unique. They tend to be numbered or lettered in order.

All Aninc does is use the specified server name to generate one which may exist on the same network.

For example, if you specify the server:

ntp2a.mcc.ac.uk

FACTS will try this first, but if it happens to timeout or otherwise fail,

Aninc (if enabled) will kick in and try the server:

ntp2b.mcc.ac.uk

If this works, great. If it also fails, then you haven't lost anything.

In fact, unless you happen to be watching the FACTS GUI then you won't even know if Aninc is enabled!

The downside of using Aninc is that FACTS will send a second request if the first one fails. This may slow things down slightly.

Please note that if your usual server is named clock.*, ntp.*, tick.* or some other generic name then there will probably be no point in activating Aninc.

To enable Aninc, select the **Settings->Aninc On Error** menu item.

1.44 Settings: Extra Half Hour

If you live in a country which has a half-hour timezone offset, then you should set TZ to the whole number of hours, and also enable this option.

1.45 Settings: Save Settings

This saves the current settings into **env-vars** and **tooltypes** .

1.46 Special Menu

Project Settings Special

Reset BattClock

Read BattClock Time

Download Databases

Boredom Relief...

1.47 Special: Reset BattClock

Will reset your battery backed-up clock to 1 Jan 1978. This should be used only if your clock doesn't appear to be working properly.

Identical in operation to SETCLOCK RESET

1.48 Special: Read BattClock Time

Will read your battery backed-up clock's time and write it back to the system.

Identical in operation to SETCLOCK LOAD

1.49 Special: Download Databases

Downloads the [public NTP server](http://www.eecis.udel.edu/~mills) lists from <http://www.eecis.udel.edu/~mills> for use with the [Server Info...](#) menu option.

1.50 Special: Boredom Relief...

An obligatory option found in all Unsatisfactory Software projects, in a similar fashion to how Digita always have their "playtime" tool. Requires `als.library` (Aminet util/libs/als_lib.lha)

1.51 Gimme more FACTS

Here is a rather hurried list of future enhancements;

- * Removal of 20ms (20000 μ s) time lag on SNTP. The actual lag is smaller than that, but my simple tests involved console output counted in the time...

- * Server mode

- * Support for NTP v4, if this has any effect on SNTP

- * Full NTP client/server instead of SNTP

- * Rewrite and clean up of parts of the code

- * Complete localisation

- * Supplying a list of servers which FACTS can go through to find the most accurate.

- * Cancel button or hotkey to abort connection operations (apologies to the person I promised this to: I still haven't worked out how to do it)

- * A three-hit-calc-time-lag-for-more-accuracy option

- * Time verification

- * Configuring the displayed time format

- * Very future idea: FANGS. Just wait :-)

- * Any ideas? [E-mail me](#).

1.52 You can prove anything with FACTS

Want to know who to blame for this?

Chris Young, chrisdpy@bigfoot.com

(this is a redirection address, and will be active forever)

E-mail me if you use this program, have any ideas for it, problems or... anything else.

Incidentally, I'm now on ICQ with UIN 28784166. If you have a pressing need to contact me that way, you are more likely to catch me on-line during UK office hours (although it's still not terribly likely). Otherwise, use e-mail (which I almost always reply to).

Also, visit my website at <http://www.unsatisfactory.freeseerve.co.uk/>

It now contains a FACTS area for support and latest information about FACTS2. There is a [FAQs](#) page on there, but I don't get many questions so it's currently empty!

1.53 Thanks to...

Thanks to everybody who has offered help, suggestions, bug reports etc.

Especially thanks must go to the following people:

Jeff Pierce for testing FACTS 2.1 betas with TermiteTCP, and not getting annoyed when it consistently crashed...

Linus McCabe for helping me track down an annoying bug which wouldn't show up on my system.

Raj Joshi for lots of timezone information, and drawing my attention to a bug which he didn't know anything about...

Everybody on comp.protocols.time.ntp, where I managed to start a long discussion about the number of seconds between 1900 and 1978...

1.54 FACTual errors (groan - Ed)

Not a bug as such, but an Amiga problem which I should warn you about.

Some programs which do timing query the system time, which is "guaranteed" to be unique and monotonically increasing. As you can imagine, changing the system time may cause problems. Setting it backwards can cause crashes.

Setting it forwards by large amounts may cause problems with timing programs. Shareware which expires after a certain amount of time may think your time is up (although if it is written properly the built-in timer should take care of this, and it will not cause problems).

If you have any trouble at all with this, please set the [default operation](#) so "System" is NOT checked, but "BattClock" is. This will cause most events to adjust your BattClock but leave the system time alone.

Please also see [Year 2000 compatibility](#)

1.55 ARexx Port

FACTS has an ARexx port called "FACTS". The version number shown next to some of the commands is the lowest version of FACTS which implements that command. Please use VERSION and REVISION to check your script will work, and exit if the user is running an old version of FACTS.

There are a few other standard commands (HIDE, SHOW, QUIT, ENABLE and DISABLE) which do the same as clicking buttons on the Commodities Exchange.

In addition are the following;

DSTMODE 2.1

Will return 1 if DST is enabled, 0 otherwise. Together with AutoDST this could be used in scripts to automatically set other program's DST settings.

DSTMODE 2.4

v2.4 of FACTS has extra functionality on the DSTMODE command: it can toggle DST on and off according to the current settings. This will not work terribly well in conjunction with AutoDST! A '1' turns DST ON, and a '0' turns it off.

GETTIME

If possible, FACTS will connect to the timeserver and return the current date and time. If FACTS is unable to connect for some reason, it will return the current system time instead. The format is as follows;

Day Mmm dd hh:mm:ss year

SETTIME

Will connect to the timeserver and set the Amiga clock according to the current default operation. If there was an error, RC will be set as;

1 = No TCP/IP stack

2 = Cannot connect to server (or not online)

3 = Error with host name lookup (v2.1)

4 = Receive operation timed out (v2.1)

5 = Server not synchronised (v2.2; sntp mode only)

1.56 NTP Servers

Here is a quick list of open access public NTP servers. It doesn't pretend to be complete or even particularly up-to-date, but it should get you started with FACTS. A lot of ISPs have NTP servers for their customers to use, so it is worth checking to see if your provider offers the service.

A full list of public stratum 1 & 2 servers can be obtained from:

<http://www.eecis.udel.edu/~mills/ntp/servers.htm>

If your country isn't here, then please check the full lists.

Physical Location Address Stratum

America Washington tick.usno.navy.mil 1

Australia Tasmania ntp.ml.csiro.au 1

Canada Ontario tick.utoronto.ca 2

England Manchester ntp2a.mcc.ac.uk 2

France Lyon ntp.univ-lyon1.fr 2

Germany Berlin ntps1-0.cs.tu-berlin.de 1

Ireland Dublin salmon.maths.tcd.ie 2

Italy Torino time.ien.it 1

Japan Fukuoka clock.nc.fukuoka-u.ac.jp 1

The Netherlands Amsterdam ntp0.nl.net 1

New Zealand Hamilton truechimer1.waikato.ac.nz 2

Norway Oslo fartein.ifi.uio.no 2

Scotland Glasgow ntp.cs.strath.ac.uk 2

Slovenia Ljubljana biofiz.mf.uni-lj.si 2

South Africa Pietermaritzburg ntp.cs.unp.ac.za 2

Spain Altea slug.ctv.es 2

Sweden Stockholm Time1.Stupi.SE 1

Switzerland Zurich bernina.ethz.ch 2

1.57 Getting Started with FACTS

The first thing you should do after installing FACTS is ensure that your timezone is set correctly. You may already have the **TZ env-var** set on your system, in which case FACTS should already show the correct details. If not, FACTS will (where available) obtain the current timezone from Locale. On the FACTS GUI, the gadget to the right of " \pm hrs" should be set to the whole number of hours you are east of GMT. If you live in a country with a half-hour offset from GMT, then you must also check the **Settings->Extra Half Hour** menu item. Also ensure that the DST checkbox is set if you are in summertime, and unset otherwise.

Now go on-line and click "Check" on the GUI. If all goes well, FACTS should return the correct time in the Server box. If an error message appears, please consult the **list of error messages**. If the wrong time appears, please ensure that the timezone offset and DST checkbox are set correctly, that the **Settings->Service** menu is set to "sntp", and that there are no checkmarks next to any **Settings->Compatibility** options.

Now save the configuration (Right-Amiga+S) and proceed to **example configuration** or **Clock Synchronisation**

1.58 FACTS Error and Other Messages

Not enough memory!

There is not a large enough block of free memory in order to run FACTS

Cannot connect to server

There was a problem connecting to the specified server. The server may be down, or you may be attempting to connect to an unsupported service. Check the machine name and port number and try again.

Please start an AmiTCP compatible TCP/IP stack! or No TCP/IP Stack!

FACTS has attempted to make a connection to the Internet, but cannot access "bsdsocket.library". Ensure your TCP/IP stack is started, and is AmiTCP compatible. If in doubt, contact the author.

Unable to open ...

The specified system file cannot be opened either because it is missing or you do not have enough memory.

FACTS requires ARexx to be active

Start ARexx by double-clicking on the SYS:System/RexxMast icon.

Error with battery backed-up clock or battclock.resource

The battery backed-up clock could not be found or is not working properly.

Looking up host...

FACTS is attempting to resolve the supplied domain name.

Host unknown

The supplied address was not known by the domain name server. Check the address and try again.

Temporary error

The domain name server reported a temporary error. Please try again later.

Unexpected server failure

A fatal error has occurred to the domain name server.

No IP address for host

The supplied address was known, but does not currently have an Internet address. Try a different host.

Error with DNS lookup

A general or unknown error has occurred during the DNS lookup. Please ensure you are on-line.

(Attempting to) connect

FACTS is attempting to make a connection to the specified server.

Connection timed out

The timeout period has been exceeded. The server is probably busy or there is a slow network connection between you and the server. Try a different

server, or attempt the connection again.

Connection refused

The server does not accept connections to the port you have specified.

Ensure the port is correct, and that the server supports the service you have selected.

Network unreachable

It is currently impossible to connect to the specified server. Try again later, or try a different server.

Error connecting

A general, unknown or unspecified error occurred during connection. Check the address, service and port number and try again. If the problem persists, please contact the author.

Receiving data...

FACTS is receiving or waiting to receive data.

Sending request...

Connection succeeded. FACTS is sending a request for time to the server.

Timed out

The receive request timed out according to the TIMEOUT tooltype setting.

Alarm Condition

The sntp server you have connected to has not been synchronised in the last 24 hours. FACTS has not adjusted your clock. Try a different server.

Error writing...

FACTS could not write to the specified file. Please check that it is not write-protected.

If an error appears that is not mentioned on this page, please contact the author.

1.59 Tooltypes

Most of the tooltypes can be set with options on the GUI. Please note that it is NOT advisable to set tooltypes while FACTS is running.

DONOTWAIT

Set this. Keep it set. Only affects running FACTS from the WBStartUp drawer, and Workbench'll moan if you don't.

STARTPRI

This tells WB the order in which to load programs in the WBStartUp drawer.

Please note that saving settings will overwrite this option,

so please instead ensure that RexxMast has a STARTPRI of more than 0 (or, better, execute it in s:user-startup)

CXPRIORITY

FACTS's priority as a commodity. Probably safe to set this to something ridiculously low.

CXPOPUP

Set this to "YES" if you want the GUI to appear on startup, and "NO" if you don't. I would suggest setting it to "NO" if you put FACTS in WBStartUp, and "YES" at all other times.

CXPOPKEY

Hotkey combination to pop up FACT's GUI. The default is "ctrl alt f", which probably interferes with FKey's default. And FTPMount's, come to that.

CHECKKEY

Hotkey to synchronise the system time. See several ways to pay

TIMEOUT

Specifies the timeout in seconds for receiving data.

DEBUG

Do NOT set this unless I tell you to, as strange things may happen.

CUSTOM DST SETTINGS

DSTSTARTMONTH

Month when DST begins, from 1-12

DSTSTARTWDAY

Day of week when DST begins, 0=Sunday, 1=Monday etc

DSTSTARTHOUR

Time when DST starts (hours only). eg. 1 = 1:00am

DSTSTARTWEEK

Which week in the month DST begins. 0=last, 1=first, 2=second, etc

HEMISPHERE

Set to "NORTH" or "SOUTH". If AutoDST isn't working properly, then you've set it wrong!

DSTENDMONTH

DSTENDWDAY

DSTENDHOUR

DSTENDWEEK

Specify when DST ends. See the DSTSTART tooltypes.

The following tooltypes can - and should - be set from the GUI!

WRITETO

Flags: BATTLOCK, SYSTEM

Specify more than one option by using the "or" (vertical bar) operator.

TINT

Specify the time interval between automatic checks in seconds.

DSTNAME

Specify the name of your summertime. Please use four characters!

UTC

Obsolete.

AUTODST

Specify AutoDST mode: -1 = custom. Any other number is the option in the AutoDST menu starting from 0 (off) at the top!

IGNORETZ

Set to stop the clock being adjusted along with the TZ env-var.

DAYTIMEPORT

Specifies the current TCP port to use for the 'daytime' service. Defaults to 13

TIMEPORT

Specifies the current TCP port to use for the time/tcp service. Defaults to 37

SERVICE

Specifies the current service.

123 = sntp, 13 = daytime, 37 - time/tcp, 372 = time/udp

UTCOFFSET

Specifies timeserver's offset from GMT as seconds east.

SNTPPORT

Specifies the current UDP port for the sntp service. Defaults to 123

UDPTIMEPORT

Specifies the current UDP port to use for the time/udp service. Defaults to 37

COMPATIBILITY

Flags option. Multiple options are separated by vertical bar.

Options: MODE2036 = 2036 mode

BASE2015 = use 2015 as two-digit base

BATT2078 = BattClock 2078 correction

APPMENU

If set, an AppMenu item will appear in the Workbench "Tools" menu.

EXTRAHALF

If set, an extra half-hour will be added to your whole hour TZ offset.

QUIETDST

If set, AutoDST will not notify you of the change.

STGEMUL

If set, SummerTimeGuard emulation will be enabled.

CHECKONSTARTUP

If set, FACTS will check for the current time on startup.

DEFPORT

Specifies that the default port should be used, instead of the #?PORT values above.

ANINC

Enables [Aninc](#) auto server change system.

1.60 Environmental Variables

FACTS writes the following files to ENV: and/or ENVARC:

[TZ](#)

[TIMESERVER](#)

[SUMMERTIME](#)

1.61 TZ

Miami requires you to set this, as do several other programs - in other words, you probably already have it set.

If not, here's what the ENV:TZ file should contain;

A three-character timezone code (eg. GMT, EST, WET), followed by a number showing the offset from GMT. If you are x hours behind GMT, then the number should be positive, not negative. If you are ahead of GMT, then the number should be negative.

During daylight saving time (DST), an extra code is added. The first part is identical to before (except the offset, which is -1 from the previous value), and an additional four character code showing the DST name is added to the end. eg. during British Summer Time, I use the TZ string GMT-1BST

If the TZ variable is not set, then FACTS will default to not adjusting the time obtained from the server - usually this is UTC (GMT).

A better description of ENV:TZ can be found in the Miami docs

Please note that if you live in a "half hour" timezone, you should only set the whole number of hours here.

1.62 TIMESERVER

In this variable, FACTS stores the most recently-configured NTP server address. In future versions, this file may run to multiple lines, but it currently only contains one. This file is read by FACTS in both CLI and GUI

modes.

Format:

ADDRESS:PORT

Example:

ntp2a.mcc.ac.uk:37

The port refers to the current port number, and usually corresponds to the default service for that port.

1.63 SUMMERTIME

Written by SummertimeGuard, this defines almost every aspect of timezone information. FACTS only writes this files, it never reads it.

Format:

{ DST START } { DST END }

Code:Offset:Week:Weekday:Month:Time:Week:Weekday:Month:Time:Offset:Status

Where all time values are in minutes. The week specifies the week number in the month, ie. 1 is the first week, 2 the second, etc. 0 indicates the last week.

Code is a two-character country code. FACTS always writes "NT" here (for "Network Time")

Status is the current status of DST: YES or NO

1.64 Year 2000 Compatibility

FACTS IS YEAR 2000 COMPATIBLE!

It is also "Jan 19 2046, 03:14:08" compatible. However, there are a few issues surrounding dates and the Amiga/UNIX/NTP which will affect FACTS;

Some of this information comes from the Y2k White Paper at Amiga

<http://www.amiga.de/diary/developers/092098-y2k.html>

'daytime' service

This is Year 2000 compatible, but unfortunately there appears to be two different date formats which they transmit. One type will be fine, but the other only sends two digits for the year. Therefore, FACTS takes the first two digits as "20" if the year is below 78, and as "19" if it is above "78".

This will cause a problem in the year 2078, but can be fixed by selecting the compatibility setting [Use 2015 As 2 Digit Base](#)

NTP (time and sntp services)

NTP servers measure time by the number of seconds passed since Jan 01, 1900.

The largest value this can hold is Feb 07 2036 06:28:18, so while NTP is

quite able to cope with that FACTS will think it's 1900 again. Since the Amiga can't actually go back earlier than 1978, there's no telling what this will do. After this date, please select the compatibility setting

2036 Mode

UNIX

UNIX usually measures time as the number of seconds since 1970: when this clocks over (in about 2107) it could have a disastrous affect on NTP; especially considering the time services measure time from a different base (it is likely to start transmitting negative time!). No fix. I doubt this will actually happen.

Feb 07, 2114

The Amiga measures time by the number of seconds passed since Jan 01, 1978. The largest number of seconds it can hold equates to Feb 07 2114 06:28:15, so after this time the clock will reset to Jan 01 1978, 00:00:00. There is nothing I can do about this, and I very much doubt that anybody will still be using Classic Amigas and FACTS when that time comes.

BattClocks

Battery backed-up clocks only store the year as two digits. Therefore, even though FACTS can cope until the year 2114, a reboot will cause the system to think it is 2014. More specifically, in 2078 the clock will think the year is 1978 (and in 2079, the clock will think it's 2079 etc).

Still, if you've got FACTS running and your Amiga permanently connected to the Internet (presumably all Internet access and local phone calls will be free by the year 2078), then FACTS will actually help to fix this problem...

However, by setting the compatibility mode **BattClock 2036**

FACTS will adjust the clock appropriately at startup.

1.65 CLI Usage

To use FACTS from the CLI, you simply need to issue the command:

```
FACTS
```

This will connect to the server specified in **ENV:TIMESERVER** and adjust your clock.

CLI parameters

1.66 CLI Parameters

TEMPLATE: FACTS NTP,PORT/K,SNTP/S,TIMETCP/S,TIMEUDP/S,DAYTIME/S,EXTRAHALF/S,AUTODST/K,GUI=STAYRESIDENT/S,INT=TIMEINTERVAL/K,CX_POPKEY/K

NTP: Address of NTP server to use

PORT: Port number to connect to. If service is not specified, then FACTS will connect to the service normally associated with this port.

SNTP: Use SNTP service

TIMETCP: Use time/tcp service

TIMEUDP: Use time/udp service

DAYTIME: Use daytime service

Please note that specifying a service without also specifying a port number will connect to the default port for that service.

EXTRAHALF: Will add/subtract an extra half hour from your timezone.

AUTODST: Check DST according to the country specified (country is a number from 1 in the order they appear in the AutoDST menu)

GUI: Checks time as usual, and then keeps FACTS in memory. If you use this, FACTS should be started in the background (it will not detach itself from the CLI)

The following options only make sense if "GUI" is specified...

INT: Specifies the time interval between checks.

CX_POPKEY: The hotkey to popup the FACTS GUI

(yes, I know that I'm supposed to support all three standard commodities tooltypes...)

1.67 Example Configuration

United Kingdom; dial-up connection; BattClock installed

Set your timezone string to:

(if not in summer time)

GMT ±hrs "0" DST unset

(in summertime)

GMT ±hrs "0" DST set BST

The ±hrs settings may change when you click the DST checkbox. It is important to make sure the entire line shows the correct values.

In **Addr:** , type **ntp2a.mcc.ac.uk**

In the **settings menu** , set:

AutoDST -> Europe/UK

Service -> sntp

Write Time To -> BattClock

System

Also set **AutoDST** -> Emulate SummerTimeGuard, if you use YAM2. Otherwise, leave it unset.

Always test your configuration by clicking on **Check** before saving settings

Select **Settings** -> Save Settings

If something doesn't work properly, **contact the author!**

More example configurations are welcomed.

1.68 Clock Synchronisation

This section deals with setting your Amiga up to keep the clock synchronised.

Technical details about NTP and clock synchronisation can be found in the **NTP Technical Information** section.

There are several ways to keep your Amiga's clock in sync with NTP time.

Some good, some not so good. Here's how: take your pick from the following;

It is recommended to put FACTS2 in your WBStartUp drawer, with the **CXPOPUP** tooltype set to "NO", and the **default operation** set to "BattClock" or both "BattClock" and "System"

For dial-up Internet connections, try to set your time with an ARexx script.

If on a permanent network connection, Time Interval is probably best.

ARexx

FACTS has a small ARexx port implementing a few **commands**.

If you have an ARexx script which is run every time you are connected to the Internet then simply insert the following line into it;

```
ADDRESS FACTS 'SETTIME'
```

CLI

The old compatible command line interface in FACTS2 can be used in AmigaDOS scripts. If you have an AmigaDOS script or a way of executing a command every time you log on to the Internet, then simply add "FACTS" (with the appropriate path, if necessary). See also command line options.

Int

The Int (Time Interval) option on the GUI offers a good way of adjusting your clock. I recommend setting it to about 60 seconds (remember to "save config"). Every n seconds, FACTS will attempt to connect to the specified NTP server and retrieve the time. Just keep FACTS2 in the WBStartUp drawer and set **CXPOPUP** to "NO"

Int can be temporarily disabled by selecting "DISABLE" in Commodities Exchange.

Hotkey

FACTS2 has a hotkey you can press at any time in order to set your system time. You can configure the combination through the CHECKKEY [tooltype](#)

Tools Menu

While FACTS2 is running, it has an item in the Workbench "Tools" menu called "Set Time". Selecting this will connect and set your system time. See also AppMenu Item menu.

GUI

The GUI has a button marked "Adjust": clicking this will set your system and BattClock time. (subject to the Write To setting.

Third Party

Using a scheduling utility such as Docket (Aminet util/cdity/Docket.lha), you can gain more power than the standard "Int" option. Use a command line like `sys:rexxc/rx ADDRESS FACTS 'SETTIME'`

1.69 NTP Technical Information

I'll write this section when I'm in the right mood. For now, consult the NTP RFC (I would quote the number, but I appear to have lost my copy of the document)

1.70 Frequently Anticipated Questions

Notice the title! These are questions I expect to be asked, in order for me not to get swamped with them!

Q. I installed FACTS, but now YAM2 won't let me change the DST switch!
What's going on?

You have the "Emulate SummertimeGuard" option enabled. YAM2 should switch DST automatically when this is enabled. However, if you have enabled the emulation and then disabled AutoDST, the STG files will still be on disk and YAM2 will believe STG to still be installed. If you stop using FACTS or use FACTS/AutoDST from the command line only, please DISABLE "Emulate SummertimeGuard", DISABLE "AutoDST" and/or DELETE "ENVARC:SUMMERTIME".

Why is the obtained time clearly incorrect?

If upgrading from an older version of FACTS, then please ensure that all the settings are what you expect them to be, and try again.

Check that the following settings are correct:

TZ ±hrs

Should be set to the number of hours your timezone is ahead of GMT.

eg. America should have a negative figure here, Europe positive.

Compatibility modes

If the current year is before 2015, then none of these should be set.

Otherwise, refer to the compatibility mode settings.

Services and Ports

Check that the selected service is available on the specified port number.

For example, connecting to sntp on port 37 is generally expected to produce strange results!

The default ports for each service are as follows:

sntp: 123

time/udp: 37

time/tcp: 37

daytime: 13

If these do not work, contact the server administrator.

If you still have problems, please [contact me](#) .

Q. Will FACTS support the new Workbench 3.5?

FACTS will work on WB3.5 with no problems. I am not planning on doing a WB3.5 specific version, as I much prefer to support as many users as possible (FACTS works on WB2.04, and I intend to keep it that way!).

However, there may be modifications necessary to support the following:

(there is currently no developer information for 3.5, so the below is mainly guesswork)

* any kind of built-in AutoDST feature will cause me to completely disable FACTS' AutoDST under WB3.5. I may keep the STG emulation functional for a while, but this will be removed when YAM2 supports WB3.5's DST functions.

* If WB3.5 automatically deals with the TZ env-var, then this section of FACTS will also be disabled.

* If WB3.5 has manually-switchable DST, then FACTS will use this along with Locale instead of the TZ env-var.

For the new WB3.5 GUI look, a rewrite of the GUI code will almost certainly be necessary. I will not be doing this without very high demand for it, unless I am particularly bored on one Sunday afternoon.

Hopefully GadTools will be patched to automatically give applications the new look (although I doubt this)

Will you be abandoning the Amiga and buying a Wintel PC?

No. Not unless I absolutely have to.

1.71 Commodities Exchange

Workbench's Commodities Exchange tool affects FACTS in the following ways:

(this is based on WB3.0's Exchange - the earlier 2.0 version is laid out and worded slightly differently)

Select "FACTS" from the list, and "Information" will show the title and a description for it. After selecting, the following buttons will become active:

Show Interface

Pops up the FACTS GUI. Same as pressing the hotkey, or double-clicking on the program icon.

Hide Interface

Hides the FACTS GUI. Same as selecting **Project -> Hide** .

Active/Inactive

Disabling FACTS, will stop the Time Interval check from working, and will also stop FACTS from **checking DST** every hour.

Remove

Quits FACTS silently.

1.72 Old FACTS

Version 2.7 (26.05.99)

- * New default port checkbox

- * If a time request fails, the new Aninc(tm) technology can check a second local server without you needing to type any addresses!

- * When using SNTP, FACTS will now set your system clock with accuracy to within a few microseconds.

(system time only - BattClocks are only ever accurate to 1 second)

- * Verifies default port numbers with your TCP/IP stack on startup (if available)

- * Made the code a bit shorter. More code clean up is necessary!

Version 2.6 (08.05.99)

- * Completely re-wrote most of this documentation

- * UTC/Local/Menu now adjusts automatically depending on the service selected

- * AutoDST now checks at startup and every hour thereafter.

- * Fixed a problem with DST adjusting in the wrong direction

- * Various other small changes

Version 2.5 (22.03.99)

* locale.library support (if available):

Localisation of day and month names

Uses locale timezone information if \$TZ not available

* Can check clock on startup

* Can now stay resident when launched from the CLI

* Added loads more DST rules, and an option to customise DST changes

* Added an option to emulate the behaviour of SummertimeGuard

Version 2.4 (25.02.99)

* Accidentally put the Southern hemisphere DST round the wrong way. Fixed.

* The DSTMODE ARexx command can now set DST as well as returning it.

* New "quiet" option for AutoDST

Version 2.3 (22.02.99)

* MAJOR BUG! When AutoDST was enabled, and you were in the month containing the start of DST, DST would be enabled at the start of the month, and disabled at the end.

* More server info (database)

* "Year 2000"-type compatibility modes

* Support for half-hour timezones

* Ability to check for a newer version of FACTS

* Disable the Tools menu "Set Time" item

* Changed the time display slightly

* Hopefully made this guide a little bit easier to find your way around

Version 2.2 (22.01.99)

* Now supports the UDP services 'time/udp' and 'sntp'

* AutoDST should now work with American DST changes

* Better command line support

* The usual minor bugfixes

Version 2.1 (28.12.98)

* Completely re-wrote the connection code to use bsdsocket.library instead of the virtual TCP: device. This will enable FACTS to work with more TCP/IP stacks (eg. TermiteTCP)

* Supports the 'time' (tcp) service as well as 'daytime'.

* Can now connect to any port, not just the standard ones.

* Better timezone support and error messages

* Remembers the Server/Amiga/Diff fields when hiding/showing the GUI

* Cleaned up the GUI

* A few bugfixes, including removing the response time stuff because it didn't really seem to work properly

Version 2.0 (22.11.98)

* GUI

- * No longer requires any external programs
- * Supports timeservers which transmit in local time
- * Attempts to calculate server time lag
- * ARexx port
- * Check/adjust every n seconds
- * Runs as a commodity
- * Hotkey to set system time
- * Now correctly adjusts for midnight

Version 1.1 (01.11.98)

- * Fixed the bug where \$TZ wasn't being closed
- * FACTS now adjusts the day, month and even year if the timezone value causes the time to increase/decrease over midnight.
- * Now uses an internal routine to set the system time, rather than calling DATE.

Version 1.0 (28.10.98)

First release
