TIME DISSEMINATION SERVICES

The following tables are based on information received at the BIPM between February and March 2018.

AUTHORITIES RESPONSIBLE FOR TIME DISSEMINATION SERVICES

AOS   Astrogeodynamical Observatory
                Borowiec near Poznan
                Space Research Centre P.A.S.
                PL 62-035 Kórnik - Poland

AUS   Electricity Section
                National Measurement Institute
                PO Box 264
                Lindfield NSW 2070 - Australia

BelGIM   Belarussian State Institute of Metrology
                National Standard for Time, Frequency and
                Time-scale of the Republic of Belarus
                Minsk, Minsk Region – 220053 Belarus

BEV   Bundesamt für Eich- und Vermessungswesen
                Arltgasse 35
                A-1160 Wien, Vienna - Austria

BoM   Ministry of economy - Bureau of metrology
                Jane Sandanski 109a
                1000 Skopje, Macedonia

CENAM   Centro Nacional de Metrología
                km. 4.5 Carretera a Los Cués
                El Marqués, Querétaro, C.P. 76246 - Mexico

CENAMEP   Centro Nacional de Metrología de Panamá AIP
                CENAMEP AIP
                Ciudad del Saber
                Edif. 206 Panama

DMDM   Directorate of Measures and Precious Metals
                Group for Time, Frequency and Time Dissemination.
                Mike Alasa 14
                11000 Belgrade
                Serbia

EIM   Hellenic Institute of Metrology
                Electrical Measurements Department
                Block 45, Industrial Area of Thessaloniki
                PO 57022, Sindos
                Thessaloniki, Greece

GUM   Time and Frequency Laboratory
                Główny Urząd Miar – Central Office of Measures
                ul. Elektoralna 2
                PL 00 – 950 Warszawa P–10, Poland

HKO   Hong Kong Observatory
                134A, Nathan Road
                Kowloon, Hong Kong, China

ICE	Instituto Costarricense de Electricidad
ICE
San Jose
Costa Rica

IGNA	Instituto Geográfico Nacional Argentino
Servicio Internacional de la Hora
General Manuel N. Savio 1898
B1650KLP – Villa Maipú, Provincia de Buenos Aires, Argentina

IMBH	Institute of Metrology of Bosnia and Herzegovina (IMBH)
Laboratory for time and frequency
Augusta Brauna 2
71000 Sarajevo, Bosnia and Herzegovina

INACAL	Instituto Nacional de Calidad
Calle De La Prosa 150
San Borja, Lima 41, Peru

INM	Instituto Nacional de Metrología de Colombia
Avenida Carrera 50 No. 26 – 55 Interior 2
Bogotá D.C. – Colombia

INPL	National Physical Laboratory
Danciger A bldg
Givat - Ram, The Hebrew university
91904 Jerusalem, Israel

INRIM	Istituto Nazionale di Ricerca Metrologica
Strada delle Cacce, 91
I – 10135 Turin, Italy

JV	Justervesenet
Norwegian Metrology Service
PO Box 170
2027 Kjeller, Norway

KIM	Puslit Kalibrasi, Instrumentasi dan Metrologi --
Lembaga Ilmu Pengetahuan Indonesia
Research Centre for Calibration, Instrumentation and Metrology --
Indonesian Institute of Sciences
(Puslit KIM – LIPI)
Kawasan PUSPIPTEK
Serpong Tangerang 15314 Banten - Indonesia

KRISS	Center for Time and Frequency
Division of Physical Metrology
Korea Research Institute of Standards and Science
267 Gajeong-Ro, Yuseong Daejeon 34113
Republic of Korea

KZ	Kazakhstan Institute of Metrology
Orynbor str., 11
Astana, Republic of Kazakhstan

LNE-SYRTE	Laboratoire National de Métrologie et d'Essais
Systèmes de Référence Temps-Espace
Observatoire de Paris
61, avenue de l'Observatoire, 75014 Paris – France

LT	Time and Frequency Standard Laboratory Center for Physical Sciences and Technology Savanoriu av. 231 Vilnius LT-02300, Lithuania
MASM	Time and Frequency Standard Laboratory Mongolian Agency for Standardization and Metrology Peace avenue 46A, Bayanzurkh district, Ulaanbaatar 13343 Mongolia
METAS	Federal Institute of Metrology Sector Length, Optics and Time Lindenweg 50 CH-3003 Bern-Wabern Switzerland
MIKES	VTT Technical Research Centre of Finland Ltd Centre for Metrology MIKES P.O. Box 1000, FI-02044 VTT, Finland
MSL	Measurement Standards Laboratory Callaghan Innovation 69 Gracefield Road PO Box 31-310 Lower Hutt – New Zealand
NAO	Time Keeping Office Mizusawa VLBI Observatory National Astronomical Observatory of Japan 2-12, Hoshigaoka, Mizusawa, Oshu, Iwate 023-0861 Japan
NICT	Space-Time Standards Laboratory National Institute of Information and Communications Technology 4 -2 -1, Nukui-kitamachi Koganei, Tokyo 184-8795 - Japan
NIM	Time & Frequency Laboratory National Institute of Metrology No. 18, Bei San Huan Dong Lu Beijing 100029 - People's Republic of China
NIMB	Time and Frequency Laboratory National Institute of Metrology Sos. Vitan - Barzesti, 11 042122 Bucharest, Romania
NIMT	Time and Frequency Laboratory National Institute of Metrology (Thailand) 3/5 Moo 3, Klong 5, Klong Luang, Pathumthani 12120, Thailand
NIST	National Institute of Standards and Technology Time and Frequency Division, 688.00 325 Broadway Boulder, Colorado 80305, USA

NMIJ   Time Standards Group
National Metrology Institute of Japan (NMIJ), AIST
Umezono 1-1-1, Tsukuba, Ibaraki 305-8563, Japan

NMISA   Time and Frequency Laboratory
National Metrology Institute of South Africa
Private Bag X34
Lynnwood Ridge 0040, Pretoria - South Africa

NMLS   Time and Frequency Laboratory
National Metrology Institute of Malaysia
Lot PT 4803, Bandar Baru Salak Tinggi,
43900 Sepang - Malaysia

NPL   National Physical Laboratory
Time and Frequency Group
Hampton Road
Teddington, Middlesex TW11 0LW
United Kingdom

NPLI   Time and Frequency Metrology Section
CSIR-National Physical Laboratory
Dr.K.S.Krishnan Road
New Delhi 110012 - India

NRC   National Research Council of Canada
Measurement Science and Standards
Frequency and Time Standards
Bldg M-36, 1200 Montreal Road
Ottawa, Ontario, K1A 0R6, Canada

NSC IM   Time and Frequency Section
National Scientific Center "Institute of Metrology"
Kharkov - Ukraine
Region – 61002 Ukraine

NTSC   National Time Service Center
Chinese Academy of Sciences
3 East Shuyuan Rd, Lintong District, Xi'an
Shaanxi 710600, China

ONBA   Servicio de Hidrografía Naval
Observatorio Naval Buenos Aires
Servicio de Hora
Av. España 2099
C1107AMA – Buenos Aires, Argentina

ONRJ   Observatorio Nacional (MCTIC)
Divisão Serviço da Hora
Rua General José Cristino, 77 São Cristovão
20921-400 Rio de Janeiro, Brazil

ORB	Royal Observatory of Belgium Avenue Circulaire, 3 B-1180 Brussels, Belgium
PTB	Physikalisch-Technische Bundesanstalt Time and Frequency Department, WG 4. 42 Bundesallee 100 D-38116 Braunschweig, Germany
ROA	Real Instituto y Observatorio de la Armada Plaza de las Tres Marinas s/n 11.100 San Fernando Cádiz, Spain
SG	National Metrology Centre Agency for Science, Technology and Research (A*STAR) 1 Science Park Drive 118221 Singapore
SIQ	SIQ Ljubljana Metrology department Trzaska ul. 2 1000 Ljubljana Slovenia
SP	SP Technical Research Institute of Sweden Box 857 S-501 15 Borås Sweden
TL	National Standard Time and Frequency Laboratory Telecommunication Laboratories Chunghwa Telecom. Co., Ltd. No. 99, Dianyan Road Yang-Mei, Taoyuan, 32661 Taiwan Chinese Taipei
TP	Institute of Photonics and Electronics Czech Academy of Sciences Chaberská 57, 182 51 Praha 8 Czech Republic
UME	Ulusal Metroloji Enstitüsü Baris Mah. Dr. Zeki Acar Cad. No: 1 41470 Gebze - Kocaeli Turkey
USNO	U.S. Naval Observatory 3450 Massachusetts Ave., N.W. Washington, D.C. 20392-5420 USA
VMI	Laboratory of Time and Frequency (TFL) Vietnam Metrology Institute (VMI) No 8, Hoang Quoc Viet Rd, Cau Giay Dist., Hanoi Vietnam.

VNIIFTRI   All-Russian Scientific Research Institute for Physical
Technical and Radiotechnical Measurements,
Moscow Region 141570
Russia

VSL   VSL Dutch Metrology Institute
Postbus 654
2600 AR Delft
Netherlands

TIME DISSEMINATION SERVICES

AOS	AOS Computer Time Service: vega.cbk.poznan.pl (150.254.183.15) Synchronization: NTP V3 primary (Caesium clock), PC Pentium, RedHat Linux Service Area: Poland/Europe Access Policy: open access Contact: Jerzy Nawrocki (nawrocki@cbk.poznan.pl) Robert Diak (kondor@cbk.poznan.pl) Full list of time dissemination services is available on: http://www.eecis.udel.edu/~mills/ntp/
AUS	Network Time Service Computers connected to the Internet can be synchronized to UTC(AUS) using the NTP protocol. The NTP servers are referenced to UTC(AUS) either directly or via a GPS common view link. Please see http://www.measurement.gov.au/Services/Pages/TimeandFrequencyDisseminationService.aspx for information on access or contact time@measurement.gov.au Dial-up Computer Time Service Computers can also obtain time via a modem connection to our dial-up timeserver. For further information, please see our web pages as above.
BelGIM	Internet Time Service: BelGIM operates one time server Stratum 1 using the "Network Time Protocol" (NTP). The server host name is: http://www.belgim.by (Stratum 1)
BEV	Three NTP servers are available; addresses: bevtime1.metrologie.at bevtime2.metrologie.at time.metrologie.at more information on http://www.metrologie.at Provides a time dissemination service via phone and modem to synchronize PC clocks. Uses the Time Distribution System from TUG. It has a baud rate of 1200 and everyone can use it with no cost. Access phone number is +43 1 21110 826381 The system will be updated periodically (DUT1, Leap Second…).
BoM	Internet Time Service BoM operates two Stratum 1 NTP servers referenced to UTC(BoM). BoM also operates one time server Stratum 2 using the "Network Time Protocol" (NTP). Server Host Name: time.bom.gov.mk
CENAM	CENAM operates a voice automatic system that provides the local time for four different time zones for Mexico; Southeast Time, Central Time, Pacific Time and Northwest Time as well the UTC(CNM). The access numbers are: +52 442 211 0505: Southeast Time +52 442 211 0506: Central Time +52 442 211 0507: Pacific Time +52 442 211 0508: Northwest Time +52 442 211 0509: UTC(CNM)

Telephone Code
CENAM provides a telephone code for setting time in computers. For more information about this service please contact Eduardo De Carlos López at edlopez@cenam.mx

Network Time Protocol
Operates two time server using the "Network Time Protocol", it is located at the Centro Nacional de Metrología, Querétaro, Mexico. Further information at http://www.cenam.mx/hora_oficial/

Web-based time-of-day clock that displays local time for Mexico's time zones. Referenced to CENAM Internet Time Service. Available at http://www.cenam.mx/hora_oficial/

CENAMEP

Network Time Server
A Stratum 1 time server is used to synchronize computer networks of the government institutions and companies in the private sector using the NTP protocol. To access the Network time service, send an email to servicios@cenamep.org.pa

Web Clock
A web clock is used to display the time of day in real time. To access the Web Clock, enter the link http://horaexacta.cenamep.org.pa/

Voice Time Server
An assembly of computers provides the local time. To access the service, call the telephone numbers (507) 5173201, (507) 5173202 and (507) 5173203

DMDM

Internet Time Service (ITS)
DMDM operates two Stratum 1 time servers using the "Network Time Protocol" (NTP), synchronized to UTC(DMDM).
Access policy: restricted.
DMDM also operates two Stratum 2 NTP servers:
vreme1.dmdm.rs or vreme1.dmdm.gov.rs
vreme2.dmdm.rs or vreme2.dmdm.gov.rs
Access policy: free.
More information on:
http://www.dmdm.rs/en/GrupaZaVremeFrekfencijuIDistribucijuVremena.php#TacnoVreme

Web-based time-of-day clock that displays local time for Serbia referenced to the DMDM ITS. Available at the web page:
http://www.dmdm.rs/en/index.php

EIM

Internet Time Service
EIM operates a time server using the "Network Time Protocol" (NTP). The address hercules.eim.gr is also accessible through IP address 83.212.233.6. This route is offered under a restricted access policy. The server uses the 10 MHz signal from our primary standard as reference and is synchronized to UTC(EIM).

GUM

Telephone Time Service providing the European time code by telephone modem for setting time in computers. Includes provision for compensation of propagation time delay.
Access phone number : +48 22 654 88 72

Network Time Service
Two NTP servers are available:
tempus1.gum.gov.pl
tempus2.gum.gov.pl
with an open access policy. It provides synchronization to UTC(PL).
Contact: timegum@gum.gov.pl

HKO	**Internet Clock Services** HKO operates time-of-day clocks that display Hong Kong Standard Time (=UTC(HKO) + 8 h) Available as: 1. Web Clock (Flash): http://www.hko.gov.hk/gts/time/HKSTime.htm 2. Web Clock (HTML): http://www.hko.gov.hk/gts/time/clock_e.html 3. Palm Clock (HTML5): http://www.hko.gov.hk/m/clock.htm **Speaking Clock Service** HKO operates an automatic "Dial-a-weather System" that provides a voice announcement of Hong Kong Standard Time. Access phone number: +852 1878200 (when connected, press "3", "6", "1" in sequence) **Network Time Service** HKO operates network time service using Network Time Protocol (NTP). Host names of the NTP servers: stdtime.gov.hk; time.hko.hk (for IPv6 users) Further information at http://www.hko.gov.hk/nts/ntime.htm
ICE	**Network Time Server** A Stratum 1 time server is used to synchronize computer networks of the government institutions and companies in the private sector using the NTP protocol. To access the Network time service, send an email to ofallasc@ice.go.cr **Web Clock** A web clock is used to display the time of day in real time. To access the Web Clock, enter the link: https://www.grupoice.com/wps/portal/ICE/Electricidad/servicios-especiales/laboratorios **Voice Time Server** An assembly of computers provides the local time. To access the service, call the telephone numbers (506) 1112
IGNA	**GPS common-view data** GPS common-view data using CGGTTS format referred to UTC(IGNA) is available through our website at http://www.ign.gob.ar/NuestrasActividades/Geodesia/ServicioInternacionalHora/TransferenciaDeTiempo
IMBH (1)	**Internet Time Service** IMBH operates several Stratum 1 time servers using the NTP protocol. These servers are directly synchronized to UTC(IMBH). The servers are available at IP address: 185.12.78.85 **Common-view data** GPS and GLONASS common-view data using CGGTTS format referred to UTC(IMBH) are available at request. Further information can be found at: http://met.gov.ba
INACAL (1)	**Network Time Server** A time server is used to synchronize computer networks of the government institutions and companies in the private sector using the NTP protocol. To access the Network time enter the link http://www.inacal.gob.pe/metrologia/categoria/sincronizacion-de-sistemas-de-computo **Web Clock** A web clock is used to display the time of day in real time. To access the Web Clock, enter the link http://www.inacal.gob.pe/

(1)   Information based on the Annual Report 2016, not confirmed by the Laboratory.

INM	Network Time Protocol

Operates a time server using the "Network Time Protocol", it is located at the Instituto Nacional de Metrología de Colombia, Bogotá D.C., Colombia. Further information at:

http://www.inm.gov.co/index.php/servicios-inm/hora-legal

Web Clock Service
A web clock is used to display the time of day in real time. The web clock is available at:
http://horalegal.inm.gov.co/

INPL   Time dissemination service is performed in Israel by telecommunication companies, whose time and frequency standards are traceable to local UTC(INPL) time and are calibrated regularly once a year against the Israeli Time and Frequency National Standard kept by INPL.

INRIM   CTD Telephone Time Code
Time signals dissemination, according to the European Time code format, available via modem on regular dial-up connection.
Access phone numbers : 0039 011 3919 263 and 0039 011 3919 264.
Provides a synchronization to UTC(IT) for computer clocks without compensation for the propagation time.

Internet Time Service
INRIM operates two time servers using the "Network Time Protocol" (NTP); host names of the servers are ntp1.inrim.it and ntp2.inrim.it.
More information on this service can be found on the web pages:
http://rime.inrim.it/labtf/ntp/.

SRC (Segnale RAI Codificato) coded time signal broadcast 20 – 30 times per day by "Radio Uno" and "Radio Tre" FM radio stations of the national broadcasting company RAI.

The SRC code dissemination to RAI by INRIM, was definitively interrupted since 2017 January 1st. RAI could decide to continue to disseminate the SRC code to the country via Radio1 and Radio3 channels, but the traceability to UTC will not be guaranteed anymore by INRIM. It is worth highlighting that the SRC code is listed among the ITU Time Dissemination Codes (Rec. ITU-R TF.583-4).

Web-based time-of-day clock that displays UTC or local time for Italy (Central Europe Time), referenced to INRIM Internet Time Service. Provides a snapshot of time with any web browser. A continuous time display requires a web browser with Java plug-in installed.

JV (1)   Network Time Protocol
JV operates an open access stratum 1 server referenced to UTC(JV)
ntp.justervesenet.no

Other stratum 1 servers over a separate network are available by special agreement. Contact: hha@justervesenet.no

KIM (1)   Network Time Protocol (NTP) Service
The NTP time information referenced to UTC(KIM) is generated by Stratum-1 NTP server at
URL: ntp.kim.lipi.go.id or IP: 203.160.128.178
The server also provides time services using Daytime Protocol, and Time Protocol.

(1)   Information based on the Annual Report 2016, not confirmed by the Laboratory.

KRISS	Telephone Time Service Provides digital time code to synchronize computer clocks to Korea Standard Time (=UTC(KRIS) + 9 h) via modem. Access phone number: + 82 42 868 5116 Network Time Service KRISS operates three time servers using the NTP to synchronize computer clocks to Korea Standard Time via the Internet. Host name of the server: time.kriss.re.kr (210.98.16.100). Software for the synchronization of computer clocks is available at http://www.kriss.re.kr
KZ (1)	Network Time Service Stratum-1 time server using the "Network Time Protocol" (NTP). Restricted access and free access ip 89.218.41.170 Stratum-2 time server using the "Network Time Protocol" (NTP). Free access. Stratum-2 is available: ip 88.204.171.178 Web-based Time Services: A real-time clock aligned to UTC(KZ) and corrected for internet transmission delay. "Six-pip time signals" are broadcast by FM radio stations hourly every day.
LNE-SYRTE	LNE-SYRTE operates several time servers using the "Network Time Protocol" (NTP) : Stratum-1 time server: ntp-p1.obspm.fr (restricted access) Stratum-2 time server: ntp.obspm.fr (free access) Futher information at: http://syrte.obspm.fr/informatique/ntp_infos.php
LT	Network Time Service via NTP protocol NTP v3 DNS: laikas.pfi.lt Port 123 Synchronization from caesium clock (1 pps) System: Datum TymeServe 2100 NTP server Access policy: free Contact: Rimantas Miškinis Mail: Laikas@pfi.lt http://www.pfi.lt/metrology/
MASM	Network Time Service via NTP It provides synchronization to UTC(MASM) Adress: ntp.mn System: LANTIME 600 Ascess policy: free
METAS	Internet Time Service METAS operates stratum-1 public NTP servers in free access. Host names: ntp.metas.ch metasntp11.admin.ch metasntp12.admin.ch metasntp13.admin.ch More information available at http://www.metas.ch/metas/en/home/fabe/zeit-und- frequenz/time-dissemination.html

(1)   Information based on the Annual Report 2016, not confirmed by the Laboratory.

MIKES	VTT MIKES provides an official stratum-1 level NTP service to paying organizations and institutions. Stratum-2 level NTP service is freely available to everyone. Both NTP services are provided over public internet.
	PTP and PTP White Rabbit services are provided to individual customers over dedicated links.
	Further information can be found at http://www.mikes.fi/ntp-palvelu/
MSL	Network Time Service Computers connected to the Internet can be synchonized to UTC(MSL) using the NTP protocol. Access is available for users within New Zealand. Two servers are available at msltime1.irl.cri.nz and msltime2.irl.cri.nz
	Speaking Clock A speaking clock gives New Zealand time. Because it is a pay service, access is restricted to callers within New Zealand. Further information about these services can be found at http://measurement.govt.nz/about-us/official-new-zealand-time
NAO	Network Time Service Three stratum 2 NTP servers are available. The NTP servers internally refer stratum 1 NTP server that is linked to UTC(NAO). One of the three stratum 2 NTP servers are selected automatically by a round-robin DNS server to reply for an NTP access. The server host name is s2csntp.miz.nao.ac.jp.
NICT	Telephone Time Service (TTS) NICT provides digital time code accessible by computer at 300/1200/2400 bps, 8 bits, no parity. Access number to the lines: + 81 42 327 7592.
	Network Time Service (NTS) NICT operates four Stratum 1 NTP time servers linked to UTC(NICT) through a leased line.
	Internet Time Service (ITS) NICT operates four Stratum 1 NTP time servers linked to UTC(NICT) through the Internet. Host name of the servers: ntp.nict.jp (Round robin).
	GPS common view data NICT provides the GPS common view data based on UTC(NICT) to the time business service in Japan.
NIM	Telephone Time Service The coded time information generated by NIM time code generator, referenced to UTC(NIM). Telephone Code provides digital time code at 1200 to 9600 bauds, 8 bits, no parity, 1 stop bit. Access phone number: 8610 6422 9086.
	Network Time Service Provides digital time code across the Internet using NTP server via free IP access: 111.203.6.13 111.203.6.12 Further information at: http://en.nim.ac.cn/page/976

NIMB (1)	1 NTP server is available: Address: ntp.inm.ro (STRATUM 1) with an open access policy Server is referenced to UTC(NIMB).

NIMT

Internet Time Services
NIMT operates 3 NTP servers at:
      time1.nimt.or.th
      time2.nimt.or.th
      time3.nimt.or.th
The NTP servers are referenced to UTC(NIMT).

FM/RDS Radio Transmission
The time code is applied to the sub-carrier frequency of 57 kHz using the Radio Data System protocol. The accuracy of time transmission is around 30 ms of UTC(NIMT) depending on the internet traffic. The time code is broadcast via 40 radio stations across the country.

NIST

Automated Computer Time Service (ACTS)
Provides digital time code by telephone modem for setting time in computers.
Free software and source code available for download from NIST.
Includes provision for calibration of telephone time delay.
Access phone numbers : +1 303 494 4774 (8 phone lines) and
+1 808 335 4721 (2 phone lines).
Further information at http://www.nist.gov/pml/div688/grp40/acts.cfm

Internet Time Service (ITS)
Provides digital time code across the Internet using three different
protocols: Network Time Protocol (NTP), Daytime Protocol, and Time Protocol.
(Time Protocol is not supported by all servers)

Geographically distributed set of multiple time servers at multiple locations within the United States of America. For most current listing of time servers and locations, see: http://tf.nist.gov/tf-cgi/servers.cgi
Free software and source code available for download from NIST. Further information at http://www.nist.gov/pml/div688/grp40/its.cfm

Telephone voice announcement: Audio portions of radio broadcasts from time and frequency stations WWV and WWVH can be heard by telephone: +1 303 499 7111 for WWV and +1 808 335 4363 for WWVH

NMIJ

GPS common-view data
GPS common-view data using CGGTTS format referred to UTC(NMIJ)
are available through the NMIJ's web site for the remote frequency calibration service.

NMISA

Network Time Service
One open access NTP server is available at address time.nmisa.org.
More information is available at http://time.nmisa.org/

NMLS (1)

Web-based time-of-day clock
A web clock is used to display the local time for Malaysia. The service is available at http://mst.sirim.my.

Network Time Service
The NTP time information is referenced to UTC(NMLS) and is currently generated by Stratum-1 NTP servers, made available to the public freely. The NTP server host names are ntp1.sirim.my and ntp2.sirim.my.

(1)   Information based on the Annual Report 2016, not confirmed by the Laboratory.

NPL

Telephone Time Service
A TUG time code generator provides the European Telephone Time Code, referenced to UTC(NPL), by telephone modem.
Software for synchronising computers is available from the NPL web site at www.npl.co.uk/time. The service telephone number is 020 8943 6333.

Internet Time Service
Two servers referenced to UTC(NPL) provide Network Time Protocol (NTP) time code across the internet.
More information is available from the NPL web site at www.npl.co.uk/time. The server host names are:
ntp1.npl.co.uk
ntp2.npl.co.uk

NPLI

Web Clock
Web-based time-of-day clock that displays Indian Standard Time (IST) and UTC(NPLI). It also displays local time in user's time zone, time-of-day of the user's device clock and its difference. Available at the web page:
http://www.nplindia.in/clockcode/html/index.php

Internet Time Service
Two servers referenced to UTC(NPLI) provide Network Time Protocol (NTP) time code across the internet.
The server host names are:
time1.nplindia.org
time2.nplindia.org

NRC

Telephone Code
Provides digital time code by telephone modem for setting time in computers.
Access phone number: +1 613 745 3900.
http://www.nrc-cnrc.gc.ca/eng/services/time/time_date.html

Talking Clock Service
Voice announcements of Eastern Time are at ten-second intervals followed by a tone to indicate the exact time.

The service is available to the public in English at +1 613 745 1576 and in French at +1 613 745 9426.
For more information see:
http://www.nrc-cnrc.gc.ca/eng/services/time/talking_clock.html

Web Clock Service
The Web Clock shows dynamic clocks in each Canadian Time zone, for both Standard time and daylight saving time. The web page is at:
http://www.nrc-cnrc.gc.ca/eng/services/time/web_clock.html.

Short Wave Radio
CHU radio station broadcasts the time of day with voice announcements in English and French and time code at three different frequencies: 3.330 MHz, 7.850 MHz and 14.670 MHz. Further information at:
http://www.nrc-cnrc.gc.ca/eng/services/time/short_wave.html

Network Time Protocol
Operates multiple time servers using the " Network Time Protocol " at different locations and on two networks. Host names:
time.nrc.ca and time.chu.nrc.ca. Further information at:
http://www.nrc-cnrc.gc.ca/eng/services/time/network_time.html

The official website for the Frequency and Time group is:
http://www.nrc-cnrc.gc.ca/eng/services/time/index.html

The contact email is: MSS-SMETime@nrc-cnrc.gc.ca

NSC IM (1)   Network Time Service.
National Science Center Institute of Metrology (Kharkiv, Ukraine) operates one time server Stratum 1 using the "Network Time Protocol" (NTP).

The server host name is: http://www.metrology.kharkov.ua/

NTSC   Network Time Service (NTS)
NTSC operates a time server directly referenced to UTC(NTSC). Software for the synchronization of computer clocks is available on the NTSC Time and Frequency web page: http://www.ntsc.ac.cn/
Access Policy: free
Contact: Shaowu DONG (sdong@ntsc.ac.cn).

ONBA   Speaking clock access phone number 113 (only accessible in Argentina).
Hourly and half hourly radio-broadcast time signal.
Internet time service at web site http://www.hidro.gov.ar/observatorio/lahora.asp

ONRJ   Telephone Voice Announcer (55) 21 25806037.
Telephone Code (55) 21 25800677 provides digital time code at 300 bauds, 8 bits, no parity, 1 stop bit (Leitch CSD5300)

Internet Time Service at the address : 200.20.186.75 and 200.20.186.94
SNTP at port 123
Time/UDP at port 37
Time/TCP at port 37
Daytime/TCP at port 13

WEB-based Time Services:
 1)   A real-time clock aligned to UTC(ONRJ) and corrected for internet transmission delay.
Further information at: http://200.20.186.71/asp/relogio/horainicial.asp
2) Voice Announcer, in Portuguese, each ten seconds, after download of the Web page at: http://200.20.186.71.

Broadcast Brazilian legal time (UTC – 3 hours) announced by a voice starting with "Observatório Nacional" followed by the current time (hh:mm:ss) each ten seconds with a beep for each second with a 1KHz modulation during 5ms and a long beep with 1KHz modulation during 200ms at the 58 , 59 and 00 seconds. The signal is transmitted every day of the year by the radio station PPE, whose signal is at 10 MHz with kind of modulation A3H and HF transmission power of 1 kW.

ORB   Network Time Service via NTP protocol
Hostname : ntp1.oma.be and ntp2.oma.be
Access policy : free
Synchronization to UTC(ORB)
Contact : ntp-as@oma.be
Information on the web pages
http://www.astro.oma.be/en/scientific-research/reference-systems-and-planetology/time-lab/

ORB provides a time dissemination via phone and modem to synchronize PC clocks on UTC(ORB). The system used is the Time Distribution System from TUG, which produces the telephone time code mostly used in Europe.
The baud rate used is 1200. The access phone number is 32 (0) 2 373 03 20. The system is updated periodically with DUT1 and leap seconds

(1)   Information based on the Annual Report 2016, not confirmed by the Laboratory.

PTB   Telephone Time Service
The coded time information is referenced to UTC(PTB) and generated by a TUG type time code generator using an ASCII-character code.
The time protocols are sent in a common format, the "European Telephone Time Code". Access phone number: +49 531 51 20 38.

Internet Time Service
The PTB operates three time servers using the " Network Time Protocol " (NTP), see http://www.ptb.de/cms/en/ptb/fachabteilungen/abtq/fb-q4/ag-q42.html for details and explanations.

The hostnames of the servers:
ptbtime1.ptb.de
ptbtime2.ptb.de
ptbtime3.ptb.de
PTB also provides a secured NTP time service. This service applies NTP's pre-shared key approach. It arose from PTB's particular duty to provide a secured NTP service for the smart grid initiative of the German Federal Ministry of Economic Affairs and Energy. The service is restricted to authenticated access only.

The hostnames of the servers
ntpsmgw1.ptb.de
ntpsmgw2.ptb.de

ROA   Telephone Code
The coded time information is referenced to UTC(ROA) and generated by a TUG type time code generator using an ASCII-character code. The time protocols are sent in a common format, the "European Telephone Time Code". Access phone number : +34 956 599 429

Network Time Protocol
More information is available from the ROA web site at www.roa.es
Host names of the servers:
hora.roa.es
minuto.roa.es

SG   Network Time Service (NeTS)
Transmit digital time code via the Internet using three protocols -
Time Protocol, Daytime Protocol and Network Time Protocol.
Operate one time server at domain name: nets.org.sg

Automated Computer Time Service (ACTS)
Transmit digital time code (NIST format) via telephone modem for setting time in computers. The coded time information is referenced to UTC(SG).
Include provision for correcting telephone time delay.
Access phone number: +65 67799978.

SIQ (1)   Internet Time Service (Network Time Protocol)
One server referenced to UTC(SIQ) provides Network Time Protocol (NTP) time code across the internet.
There is free access to the server for all users.
The server host names are:ntp.siq.si or time.siq.si
(two URL's for the same server; IP: 194.249.234.70)

SP   Telephone Time Service
The coded time information is referenced to UTC(SP) and generated by two TUG type time code generators using an ASCII-character code.
The time protocols are sent in a common format, the
"European Telephone Time Code".
Access phone number: +46 33 41 57 83

(1) Information based on the Annual Report 2016, not confirmed by the Laboratory.

The coded time information is referenced to UTC(SP) and generated by several NTP servers using the Network Time Protocol (NTP) for both IPv4 and IPv6.
Access host names: ntp1.sptime.se, ntp2.sptime.se, ntp3.sptime.se and ntp4.sptime.se

Speaking Clock
The speaking clock service is operated by Telia AB in Sweden.
The time announcement is referenced to UTC(SP) and disseminated from a computer-based system operated and maintained at SP.
Access phone number : 90510 (only accessible in Sweden).
Access phone number : +4633 90510 (from outside Sweden).

More information about these services are found on the web site www.sp.se

TL	Speaking Clock Service Traceable to UTC(TL). Broadcast through PSTN (Public Switching Telephone Network) automatically and provides an accurate voice time signal to public users. Local access phone number: 117. The Computer Time Service Provides ASCII time code by telephone modem for setting time in computers. Access phone number: +886 3 4245117. NTP Service TL operates the network time service using the "Network Time Protocol" (NTP). Host name of the server: time.stdtime.gov.tw, further information in http://www.stdtime.gov.tw/english/e-home.aspx
TP	Internet Time Service UFE operates time servers directly referenced to UTC(TP). Time information is accessible through Network Time Protocol (NTP). Server host name: ntp2.ufe.cz More information at http://www.ufe.cz/
UME	Network Time Service UME operates an NTP server referenced to UTC(UME). Server Host Name: time.ume.tubitak.gov.tr
USNO	Telephone Voice Announcer +1 202 762-1401 Backup voice announcer: +1 719 567-6742 Telephone Code +1 202 762-1594 provides digital time code at 1200 baud, 8 bits, no parity GPS via subframe 4 page 18 of the GPS broadcast navigation message Web site for time and for data files: http://tycho.usno.navy.mil/ Network Time Protocol (NTP) see http://www.usno.navy.mil/USNO/time/ntp for software and site closest to you.
VMI	Network Time Service VMI operates one time server Stratum 1 using the Network Time Protocol (NTP). For information on access to the website, please contact phuongtv@vmi.gov.vn. The server host name is: http://standardtime.vmi.gov.vn/ or IP: 113.160.59.166 port 123

VNIIFTRI

Internet Time Service
VNIIFTRI operates eight time servers Stratum 1 and one time server Stratum 2 using the "Network Time Protocol" (NTP).

The server host names are:
ntp1.vniiftri.ru (Stratum 1)
ntp2.vniiftri.ru (Stratum 1)
ntp3.vniiftri.ru (Stratum 1)
ntp4.vniiftri.ru (Stratum 1)
ntp1. niiftri.irkutsk.ru (Stratum 1)
ntp2. niiftri.irkutsk.ru (Stratum 1)
vniiftri.khv.ru (Stratum 1)
vniiftri2.khv.ru (Stratum 1)
ntp21.vniiftri.ru (Stratum 2).

VSL

Internet Time Service
VSL operates a time server directly referenced to UTC(VSL).
Time information is accessible through Network Time Protocol (NTP).
The URL for the NTP server is: ntp.vsl.nl