

Information Technology Policy

Network Timing Protocol

Number

ITP-NET017

Effective Date

October 19, 2007

Category

Network

Supersedes

None

Contact

RA-ITCentral@pa.gov

Scheduled Review

May 2024

1. Purpose

This Information Technology Policy (ITP) establishes enterprise-wide standards for the [Network Timing Protocol \(NTP\)](#).

2. Scope

This ITP applies to all entities on or connected to the Commonwealth Enterprise Network including all offices, departments, boards, commissions, councils, or any other organization (hereinafter referred to as "agencies"). Third-party vendors, licensors, contractors, or suppliers shall meet the policy requirements of this ITP as outlined in the Responsibilities section.

3. Background

A reliable network time service requires provisions to prevent accidental or malicious attacks on the servers and clients in the network. Reliability requires that clients can determine that received messages are authentic and were sent by the intended server and not manufactured or modified by an intruder.

Web servers, mail servers, and other devices that make use of time sensitive functions, such as log files or cron jobs, shall be timed accurately with precision to within one-hundredth of a second. If servers are not timed accurately, the usefulness of time sensitive information such as, but not limited to, entries in log files is diminished.

An NTP primary server is called a Stratum 1. It is a computer connected to a high precision reference clock and equipped with NTP software.

The number of computers that can be indirectly synchronized by a single primary is, for all intents and purposes, unlimited. The NTP software continuously monitors the figures of stability and accuracy of all configured servers, switching dynamically to the server with the best figures.

4. Policy

4.1 On-Premise

The Commonwealth network Enterprise NTP servers are owned by the Statewide Radio Network Division of the Pennsylvania State Police. The current NTP design is supported by eight (8) geographically diverse Stratum 1 devices. All COPANET core devices are managed by the Office of Administration, Office for Information Technology (OA OIT) and are synchronized with these Stratum 1 clocks. These services are available via the agency's metropolitan area network (MAN) connection.

Enterprise and Agency devices on the Commonwealth network shall synchronize time at least once every twenty-four hours, with the following methodology:

- Pull NTP from COPANET for core and gateway devices as identified above.
- Point downstream devices to core devices.
- Devices may, at Agency or Enterprise discretion, be configured to use some other local server(s) for NTP in order to reduce NTP traffic leaving any particular network. If local server(s) used, they shall pull NTP from core or gateway devices.

The procedures below shall be followed to configure the NTP server for Enterprise synchronization via the agency's MAN gateway:

1. NTP server xxx.xxx.xxx.xxx
2. Agency firewall changes may also be required to allow NTP traffic out. Refer to [ITP- SEC034, Enterprise Firewall Rule Set](#) for guidance.
3. Agencies can validate settings using this command to show associations:

```
#MAN DOH1A>sh ntp associations
```

```
address          ref clock      st  when  poll reach  delay  offset  disp
*~xxx.xxx.xxx.xxx xxx.xxx.xxx.xxx  2   68   256  377  11.202 -34.664  1.174
+~xxx.xxx.xxx.xxx xxx.xxx.xxx.xxx  2   127  256  377  16.808 -32.243  1.626
* sys.peer, # selected, + candidate, - outlyer, x falseticker, ~ configured
```

4.2 Cloud

Agencies utilizing Cloud solutions under Commonwealth enterprise control are advised that time synchronization is available via the gateway to the network on the assets that reside in the Cloud solution.

All cloud devices, both Enterprise and agency, shall synchronize time at least once every twenty-four hours, with the following methodology:

- Pull NTP from the local gateway.

4.3 Additional Information

Agencies shall contact the OA, Enterprise Network Services: ens@pa.gov if they have any questions or require assistance. Alternatively, a request can be submitted via the Commonwealth ITSM tool to:

Bureau of Infrastructure & Operations
 Enterprise Network Services
 Network Management
 NTP Request

5. Responsibilities

5.1 Agencies shall:

- Comply with the requirements as outlined in this ITP.

5.2 Office of Administration, Office for Information Technology shall:

- Comply with the requirements as outlined in this ITP.

5.3 Third-party vendors, licensors, contractors, or suppliers shall:

- Utilize the Commonwealth's time sources on all systems on the Commonwealth network for which time synchronization is their responsibility.
- Utilize the Commonwealth's time sources on all systems that reside in the Commonwealth's Cloud offerings for which time synchronization is their responsibility.

6. Related ITPs/Other References

- Definitions of associated terms of this policy are published on the Office of Administration's public portal: <http://www.oa.pa.gov/Policies/Pages/Glossary.aspx>
- Commonwealth policies, including Executive Orders, Management Directives, and IT Policies are published on the Office of Administration's public portal: <http://www.oa.pa.gov/Policies/Pages/default.aspx>
- [*Management Directive 205.34, Amended Commonwealth of Pennsylvania Information Technology Acceptable Use Policy*](#)
- [*ITP-ACC001, Information Technology Digital Accessibility Policy*](#)
- [*ITP-SEC000, Information Security Policy*](#)
- [*ITP-SEC034, Enterprise Firewall Rule Set*](#)

Commonwealth ITSM Tool:

<https://itcentral.pa.gov/ITSM/Pages/ServiceNow.aspx> (Commonwealth Access only)

7. Authority

[*Executive Order 2016-06 Enterprise Information Technology Governance*](#)

8. Publication Version Control

It is the [Authorized User's](#) responsibility to ensure they have the latest version of this publication, which appears on <https://itcentral.pa.gov> for Commonwealth personnel and on the Office of Administration public portal: <http://www.oa.pa.gov/Policies/Pages/default.aspx>. Questions regarding this publication shall be directed to RA-ITCentral@pa.gov.

9. Exemption from this Policy

In the event an agency chooses to seek an exemption from the guidance within this ITP, a request for a policy waiver shall be submitted via the enterprise IT policy waiver process. Refer to [ITP-BUS004, IT Policy Waiver Review Process](#) for guidance.

This chart contains a history of this publication's revisions. Redline documents detail the revisions and are available to CWOPA users only.

Version	Date	Purpose of Revision	Redline Link
Original	10/19/2007	Base Document	N/A
Revision	12/20/2010	ITP Refresh	N/A
Revision	10/17/2017	<ul style="list-style-type: none"> ITP Reformat Added Enterprise NTP Procedures Added References 	N/A
Revision	07/29/2018	<ul style="list-style-type: none"> Revised NTP design language for clarity Updated the NTP server configuration guidance 	N/A
Revision	10/05/2021	<ul style="list-style-type: none"> Mandated time sources for assets on the commonwealth network and those in commonwealth Cloud solutions. Added third-party language to Scope and Responsibilities Section Added Network Timing Protocol Definition 	N/A
Revision	05/23/2023	<ul style="list-style-type: none"> Expanded scope to any entity connecting to Commonwealth Enterprise Network Replaced definitions with links to the glossary Added section headings for on-premise vs cloud Minor policy clarifications Added reference to new confidential policy document OPD-NET017, Primary Internal NTP Relay Servers 	Revised IT Policy Redline <05/23/2023>