

511 SYSTEM PERFORMANCE MEASURES SCOPE

System performance measures are meant to help monitor 511 reliability from the following standpoints:

- Engineering – overall system design point of view and meeting of design expectations
- Operational – related to the workings of the system
- Maintenance – as the system is designed to operate

Manny, Barb and Pete to use Engineering, Operational and Maintenance to organize document

These are in addition to 511 usage measures regarding content quality and effect of traveler information on consumer travel modes and choice. The 511 usage measures that the 511 Deployment Coalition currently tracks focus on objective measures of how often users call, what information they access, etc.

Today, the Guidelines (Version 2.0) only address broad system performance measures, such as access quality and hours of operation. This document recommends recasting performance measures in a more detailed manner for 511 deployers to consider tracking to ensure their customers receive reliable access to 511. Another outcome is to provide tools and resources for reliable system upgrades and development.

Excerpt from *Implementation and Operational Guidelines for 511 Services (Version 2.0)*:

System Access Quality

In order for the telephone system to have the ability to reliably and quickly answer calls, a 511 service should be sized to accept all calls for the 90th percentile peak hour load¹. If live operators are utilized, or connected to, as part of a 511 service, the 90th percentile wait time should not exceed 90 seconds and callers should receive indications that they are on hold. 511 services should have an availability to callers of 99.8%. This translates to the system being out of service less than 18 hours a year of *unscheduled downtime*.

System performance against these parameters should be measured and monitored. Most implementers are meeting these guidelines by employing an application service provider (ASP) that operates the telephone answering ports (phone lines) and uses a voice recognition software package, which is all located off-site (even across the country in some cases). By contracting this portion of the 511 service,

¹ 90% of the time (21.6 hours of the day, 7884 hours of the year, etc.), a 511 system should have the system capacity to handle 100% of incoming calls. This guideline recognizes that extreme conditions will occur periodically that will increase demand well beyond “normal peak” calling. In those circumstances, it is not unreasonable to ask callers to re-dial to access the service.

or all of it, an implementer can benefit from the ASP's existing infrastructure, allowing the system to easily handle enormous peaks in call volumes.

Most deployers have seen a 300 – 500% increase in call volumes simply by converting an existing 7 or 10-digit travel information line to 511. For example, Southeast Florida experienced a significant increase in call volumes by converting an existing travel information phone number to 511. The system used to receive 15,000 calls per month; however, with 511 as the access number, the system now receives more than 100,000 calls per month – an increase of over 650%. For some 511 systems, major events (weather, incidents, etc.), especially in conjunction with peak travel times, can cause call volumes in a single day to exceed the call volumes of an average month.

Hours of Operation

511 services should be available to travelers 24 hours a day, 7 days a week. It is recognized that systems will not always be “operated” 24 / 7. In instances when the system is providing static, pre-recorded messages, systems should inform the caller that it is outside normal operating hours.

In the mid and late 1990s, consumer research and anecdotal information showed that traveler information systems solely designed for the weekday commuter and only operated during specific business hours were found to have limited use and applicability. Travel information is just as important, or possibly more so, to someone traveling late at night or during the weekend than to a daily commuter. With an automated system, receiving inputs from multiple sources and using non-recorded messages, a 511 service can operate around-the-clock. To date, all 511 services deployed are accessible 24 hours a day.

Beyond the Guidelines Version 2.0, early 511 deployers have found a need for more detailed computer and telephony system performance measures. These are presented below. The Guidelines Version 3.0 will include these additional performance measures for 511 deployer consideration.

To ensure quality of performance and to document performance management, the 511 deployer should undertake a total system monitoring application, or collection of applications, with reports that document system performance and that are clearly labeled and contain the date and time of data capture according to the deployer's needs. Some of the measures below are related to the system itself and others are related to enabling the system's operations and availability.

Note that where 511 services are embedded within a more comprehensive, multimodal, or multi-agency advanced traveler information system (ATIS/511), many of these measures will apply more broadly than just to the 511 system portion.

Examples of system performance monitoring follow:

- 511 system's network and facility infrastructure shall be monitored for temperature, disk space, phone lines, data acquisition, power interruption and usage. Monitoring shall occur at all times (24 / 7 / 365), with the availability of personnel on-call to support system needs. While on-call, personnel shall have remote access to systems for immediate action.
- Contact information for appropriate personnel for notification at any time (24 / 7 / 365) of system problems or emergencies should be available.
- To ensure that messages being provided by the 511 systems contain the latest information, software monitors shall be maintained in locations of data flow including:
 - Data acquisition, data fusion and message generation
 - Message data transfer to the 511 systems
 - Time entered to availability on 511
 - Message delivery to the customer
- System backup and recovery action shall include a network environment consisting of a set of systems designed to share capacity across a number of systems. In the event of power interruption, Uninterruptible Power Supply (UPS) systems should supply power to all systems until back-up power is available.
- Network backup shall consist of the following layers:
 - General network access to each system
 - Modem backup in the event of network failure
 - Should all remote access to systems be lost, final backup shall include portable media ingest, from disk or other means, on a recurring basis until remote access is restored.
- Mean time between failures for each component, and for the entire system, shall be determined and measured with actual system performance and availability.
- System Performance Reporting should be monitored on a basis determined by the 511 deployer, at least monthly, and could include:

Definitions and Examples for all below

- Number of data transfer requests
- Number of successful data transfers
- Number of batch data transfers
- Transfer of information to IVR
- Average age of incident messages (from generation to clearance)

- Average age of non-incident messages
- Average age of the message set transferred to the 511 system
- Comparison to source data
- System CPU usage / capacity
- System data storage
- Peak number of simultaneous users
- Unscheduled system downtime – when the system went down, when it came back online, the reason for the failure and how it was fixed.
- Maintenance downtime – when the system went down and when it came back online.

Definitions and Type of Functionality for all below

- Functionality of:
 - Telephone System
 - XML data feed
 - Voice recognition software
 - Data transfers / regional interoperability
 - Call transfers
 - Touchtone access
 - Multilingual message coordination
 - Call in reporting function
 - Website
 - XML data feed
 - Website hyperlinks
 - “Static” databases