



Olympic Brainz Monitor

Enterprise Solution – ES™

Publisher's Notice

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Natus Olympic Brainz Monitor
Enterprise Solution Guide



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OBM Enterprise Solution

Introduction

OBM Enterprise Solution (OBM ES™) simplifies extended workflow scenarios such as network archiving and point-of-care collaboration by creating dedicated hubs called 'OBM Location Services' (OBM LS). OBM LS functions as a common point of reference between Bedside Units (OBM BU) and Viewer Workstations (OBM VW), facilitating a variety of data management workflows.

This document describes recommended OBM enterprise workflows and the ways these workflows can be simplified through OBM ES™ deployment.

Workflow examples

There are two standard workflows in an OBM environment which can be improved by deploying OBM ES™:

- Archiving
- Session review

Archiving

Traditional scenarios

In traditional **archiving scenarios**, recently performed sessions are copied to a secure media location to prevent data loss in case of an unrecoverable disk failure in an OBM BU. In small organizations archiving can be performed to either a centralized network storage device or to a dedicated USB storage device as it is shown on the following diagram:

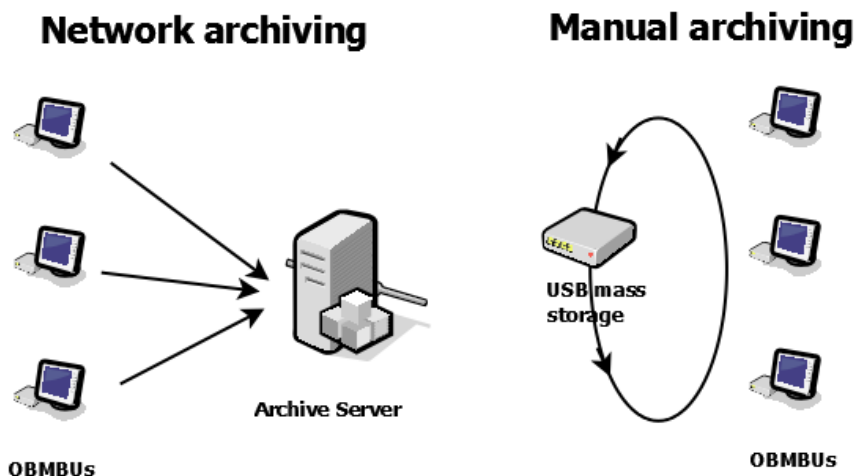


Figure 1 Traditional archiving scenarios

Traditional archiving scenarios have several drawbacks:

1. Network archiving requires each OBM BU to be allocated its own directory on the server, therefore the planning and execution of this scenario involves multiple points of configuration across deployed systems, including the server.
2. With network archiving, it is not possible to access the archive as a whole using the OBM Viewer; therefore managing extended archives arising from a myriad of bedside systems becomes a complex task.
3. Though manual archiving reduces the number of unique configuration points, it involves significant manual effort, moving the USB mass storage from one OBM BU to the next.

The OBM ES™ solution

OBM ES™ addresses drawbacks of the traditional approach by means of an additional software component – the OBM Location Service (OBM LS). The OBM LS is a server-based solution, allowing many OBM BUs to archive OBM sessions to the same physical location.

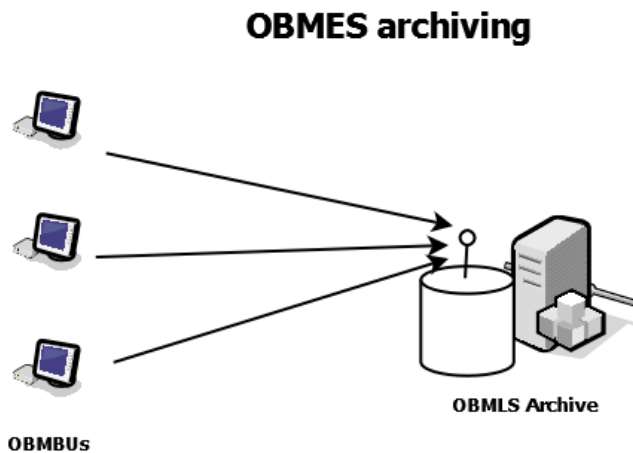


Figure 2 OBMES™ archiving

Though this archiving approach requires OBM BUs to be networked, it reduces the amount of overall configuration effort required to deploy the system since every OBM BU can be identically configured (i.e., each OBM BU can be directed to the same archive location which is itself a server name rather than a specific network share). In addition, a common archive of OBM sessions can be accessed by OBM Viewer as a whole, significantly simplifying archive review and management tasks.

Session review

Traditional scenario

OBM offers a wide range of collaboration tools for session review, both for standard clinical use and for research applications as shown in Figure 3.

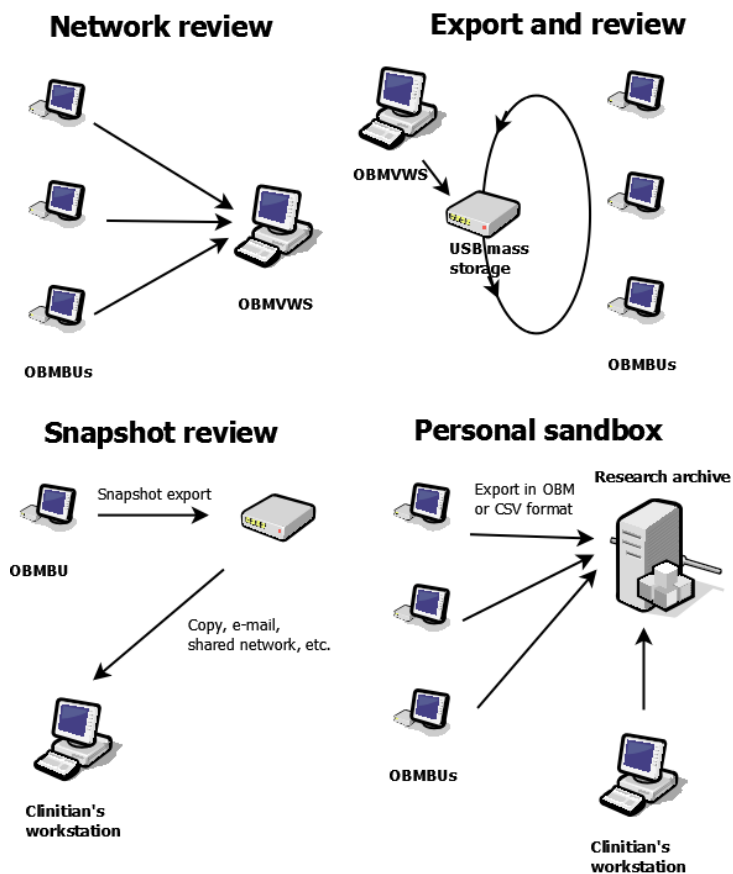


Figure 3 Traditional OBM review, collaboration and research

- **Network review** allows OBM Viewer access to any of the sessions stored on OBM BUs located on the same local network (including access to on-going sessions).
- **Export and review** is used when an OBM system is deployed without networking or when network access to OBM BUs is restricted. In this case sessions are exported manually to a USB mass storage device for later review.
- **Snapshot export** allows fast export of session information in a compact image format (JPEG). The exported image file(s) can be easily transferred elsewhere for review.
- **Personal sandbox** allows clinical researchers to gather OBM sessions in either the OBM session format or in an industry-standard EDF+ format.

As with archiving scenarios, these solutions become increasingly difficult to maintain as the number of OBM BUs and OBM WVs increases. Deploying OBM ES™ in this case can help to simplify maintenance and streamline common data management and review tasks.

OBM ES™ solution

Figure 4 shows an example of OBM ES™ deployment, which combines the multiple review/sandboxing scenarios described in the previous section.

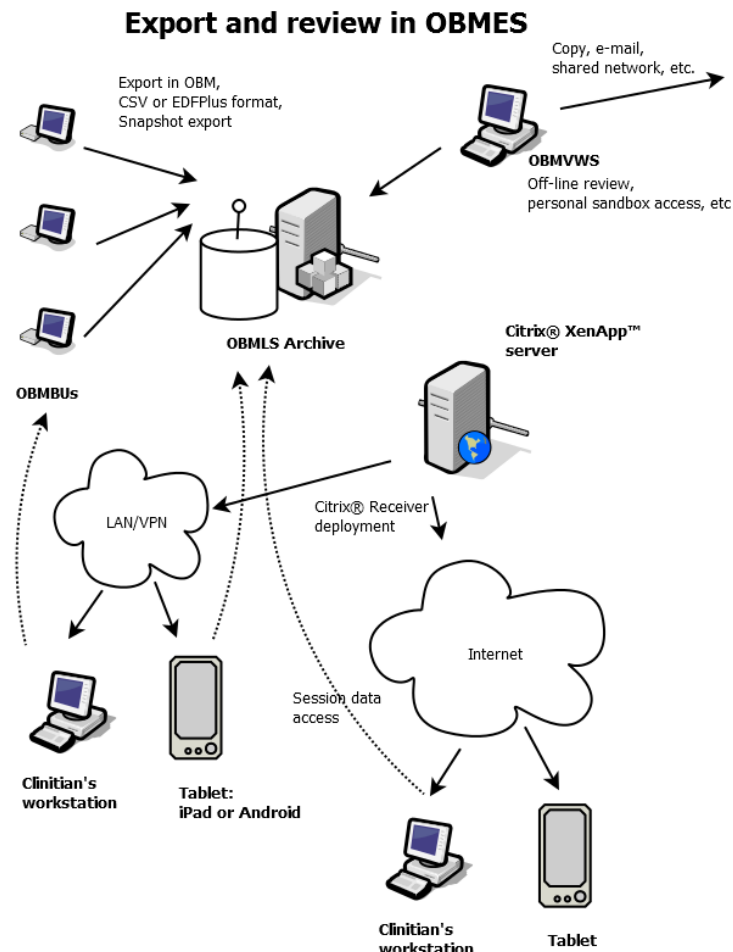


Figure 4 Review workflows in OBMES

***Use of Tablet PCs has not been validated in a clinical setting and is shown above for illustrative purposes only.**

Not only does the OBM ES™ simplify data management and review, it also facilitates functionality, which, in a traditional configuration, would have been difficult to achieve. Here is how standard scenarios are implemented using OBM ES™:

- **Remote review** workflow remains mostly unchanged. The clinicians are still able to access both previously recorded and active sessions on OBM BUs using the OBM Viewer. By deploying the

Citrix XenApp infrastructure, deployment of the OBM Viewer is significantly simplified. Configuration and deployment of Viewer sessions can be controlled from a central location rather than being scattered throughout the organization.

- **Archive, export and review** is significantly simplified from both a configuration and execution perspective. With OBM ES™, exported sessions can be stored in a dedicated review location, configured identically across multiple bedside units. Similarly, a dedicated archive location eliminates the need for manual session archiving via a USB mass storage device.
- **Snapshot export** is also simplified similarly to session export by facilitating the use of a dedicated 'snapshot' location. Such a location can be used, for example, for manual or automatic forwarding of exported snapshots to third-party reviewers.
- OBM ES™ allows one to configure as many **personal sandboxes** as necessary. It becomes easy to create multiple sets of OBM sessions in any way desired by Clinical Researchers. As of OBM software version 3.1.4, support for the popular EDF+ export format further extends OBM's research-oriented feature set.

OBM ES™ Architecture Overview

OBM Location

The OBM design relies on what is known as Service-Oriented Architecture (SOA). In systems based on SOA, a variety of network services are made available to consumers of such services. The same is true for OBM. The main building block of a distributed OBM system is called an OBM Location (OBML). An OBML is a software component which can be represented as follows:

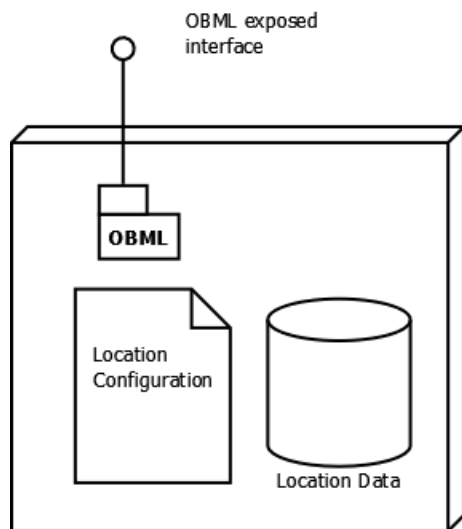


Figure 5 OBM Location

As it is shown in Figure 5, OBML consists of a software component exposing an OBM-specific network interface, plus 'Location Data' (e.g., OBM sessions) and 'Location Configuration' (which governs location behavior).

OBM Location Data is stored in a file system directory residing on any permanently attached or removable USB-based mass storage medium accessible by the Operating System (OS). A configured Location Data directory contains OBM sessions and exported items such as snapshots and session data in CSV or EDF+ formats.

OBML location components reside inside a location service. The OBM Bedside and Viewer each include a location service. This is how the Viewer, for example, gains access to the list of sessions running on a bedside unit (i.e., it contacts the bedside's location service). In fact, location services typically host many 'locations' or OBMLs. OBM ES™ adds a new hosting component – the **OBM Location Service** (a dedicated service whose sole purpose is to host multiple 'locations').

There are four distinct subsets of configuration information governing an OBML's behavior: Location Address, Location Description, Location Data Address and Location Flags:

- **Location Address** is a network address in TCP/IP V4 terms (i.e. *address:port*). A hosted location listens on the designated port for connection requests.
- **Location Name and Description** are textual notes associated with locations to simplify location identification and maintenance. These notes are visible from client software (OBM Bedside and OBM Viewer) and help a user distinguish one location from another.
- **Location Data Address** is a file system path to either a local hard disk or to a network storage reference in the `\\host\share` format.
- Most of the **Location Flags** are for internal use by the OBML component and/or the component's host and are not intended to be changed from their default values. The exceptions relevant to this document are a location's 'Active', 'Archive destination' and 'Read-only' flags. These flags are described later in this document.

OBM Location Service

The OBM Location Service (OBM LS) is a Windows service which can host one or more OBMLs, thus exposing one or more OBML network interfaces. As a Windows service, the OBM LS does not present a User Interface (UI). OBM ES™ does provide a separate UI component, the 'OBM Location Service Manager', which simplifies configuration tasks pertaining to OBM LS.

Figure 6 represents a deployment of OBM LS:

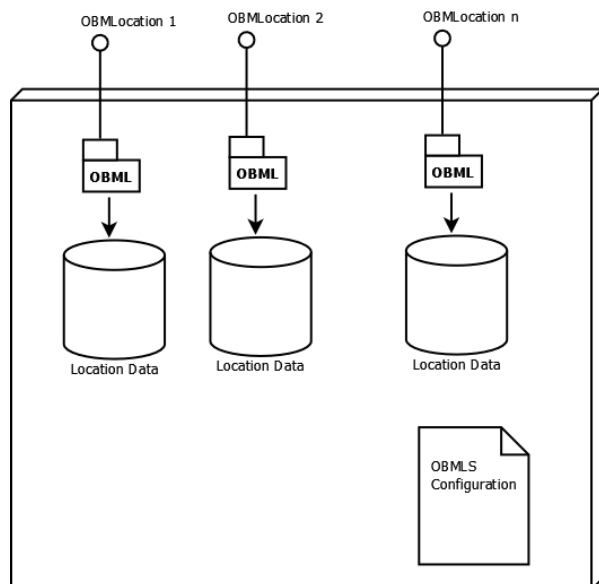


Figure 6 OBM Location Service

Installing OBM Location Service

New Installation

OBM LS can be installed on any 32-bit or 64-bit Windows Server OS starting from Windows Server 2003 R2. It can also be installed on Windows 7 Professional 32-bit or 64-bit; however, desktop Operating Systems limit the number of simultaneous connections and thus, are poorly suited to an enterprise deployment.

Note: Never install the OBM location service on the Bedside device!

To install OBM LS on a new computer, navigate to the location of OBM LS installation package (found on the OBM Viewer CD-ROM, version 3.1.4 and later) and run Setup.exe. Follow the Setup Wizard steps.

New installation will install both the OBM LS and the OBM Location Service Manager in the same directory: <PF>\XLTEK\OBM Location Service, where <PF> is a predefined Windows Program Files directory for 32 bit programs (i.e. Program Files (x86) on 64 bit Windows Servers). The installation will configure OBM LS to run automatically under the 'Local Service' account. The installation will also place a shortcut to the 'OBM Location Service Manager' in the Windows Startup folder so that it will be accessible from the System Tray each time Windows is restarted.

Updating a previous installation

Updating or re-installing OBM LS requires manual de-installation of the previously installed instance. To perform this task:

1. Stop OBM LS as described in "Starting and stopping OBM Location Service", below.

2. Exit OBM Location Service Manager, if running (right-click on its icon in the System Tray and select **'Exit OBM Service Manager'**).
3. Use Windows Control Panel->Remove Programs to uninstall 'OBM Location Service' (you may be asked to restart Windows).
4. Follow instruction from section "New Installation" to install a new version of OBM LS.

Please note that previously configured locations and location directories will remain intact during the update or re-installation process. If you wish to delete a previous configuration, refer to the following section.

Deleting configuration file

If you do not wish to keep a previous configuration, delete the configuration file and corresponding directory, containing location settings after uninstalling OBM LS (and before installing a new version).

The location of the configuration file is <PD>\Xltek\CFM\ServiceConfiguration\Locations\Service\<version>\locations.config

Where <PD> is the Windows Program Data directory and <version> is the version of OBM LS (e.g., 3.1.4). Delete the directory structure starting from (inclusive) ServiceConfiguration. This will permanently delete any previously configured locations associated with the OBM LS.

Server credentials, credentials expiration and account lockout

By default, OBM LS is configured to use 'Local Service' credentials. If this is not compatible with your IT policies or OBM LS-hosted locations require access to domain-controlled resources, the service account can be changed using the Windows Service Control Manager.

Please note that in the case where service account password expiration/lockout policies are in place for the account associated with the OBM LS, hosted locations will become periodically inaccessible. This might severely affect clinical workflow. We recommend using a dedicated account for which expiration and lockout policies are controlled manually (or disabled completely) to avoid service interruptions.

Locations configuration

The OBM LS installer creates a default location configuration pointing to the local disk:

<PD>\Xltek\SFM\Data\Locations\Service where <PD> is Windows Program Data directory. If this configuration is not desirable or the clinical workflow requires additional locations, you can change the location configuration using OBM Location Service Manager. To perform this task, run the location configuration tool by right-clicking the OBM Location Service Manager icon (located in the system tray) and selecting "Settings" from the pop-up menu (Note: The location service must be stopped before "Settings" can be accessed in this manner).

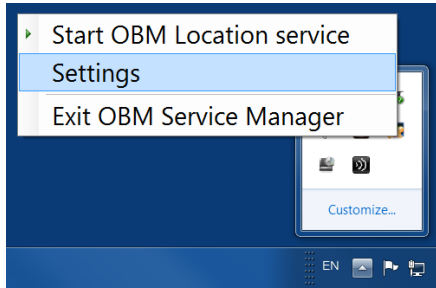


Figure 7 Invoking OBM Location Service settings

The OBM Location Service Settings dialog will appear as follows (in this case displaying the dialog as it would appear following a fresh installation of OBM LS):

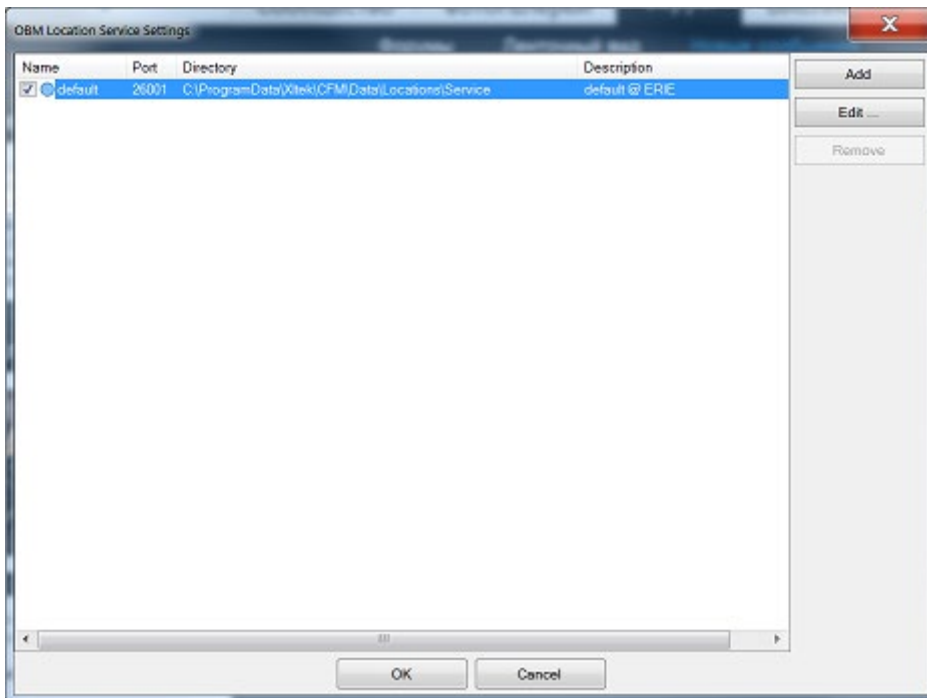


Figure 8 Default OBM LS configuration

If the default location configuration needs to be changed, select the location from the list and click the "Edit" button. The following location configuration dialog will appear:

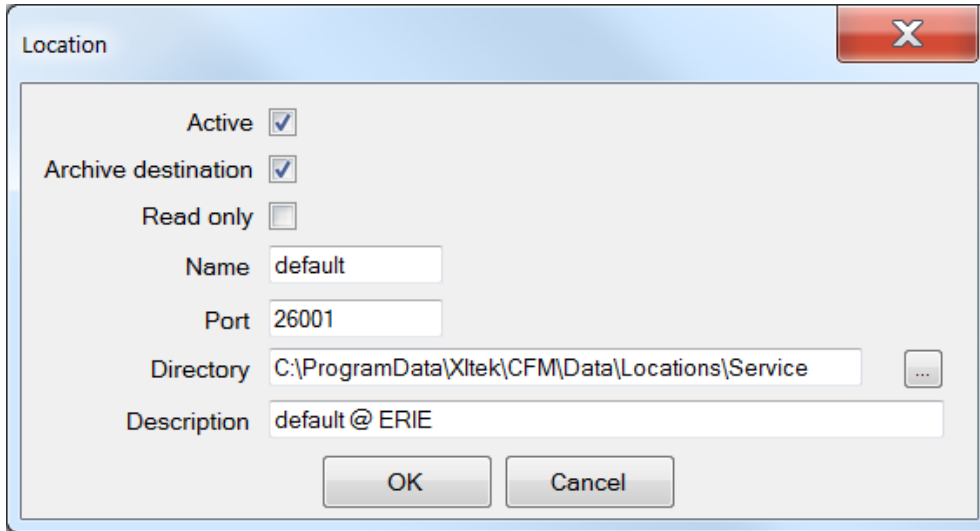


Figure 9 OBMLS Location configuration dialog

Adjust the location configuration as desired and press OK. Location configuration parameters have following meanings:

- **Active** flag represents a hosting state of the location. If set to "false" (checkbox is unchecked), the location will not be hosted by OBM LS, therefore location data will not be accessible from client software (including the OBM Viewer and Bedside units). This feature can be useful in some scenarios when the data should be hidden from client applications, but preserved for future use.
- **Archive destination** flag should be set to "true" (checkbox is checked) for locations acting as archive destinations for OBM BUs. Note that archiving has a special meaning to the OBM BU (See OBM online help for further information). If this location will be used for archiving from the bedside, ensure that 'Archive destination' is checked.
- If **Read only** flag set to "true", OBML will not allow any modifications to sessions stored at this location. To prevent accidental changes to archive sessions, it is recommended to set the **Read only** flag to "true" for locations specifically created for the purposes of archiving. Note that even with this option checked, exporting and archiving to/from this location still will be possible, while session deletion will be prohibited.
- **Name** field contains a uniquely defined location name. This name along with the content of the **Description** field will appear in the client software's location lists. The content of **Name** field must be unique for each OBM LS; however, to avoid confusion it is highly recommended that location names be unique across the entire OBM ES™ deployment.

- **Port** is an integer field defining the TCP/IP port number an OBM LS host will assign to the location. Combining the server IP address with location port number creates a unique location identity (i.e., **every location port in an OBM LS configuration must be unique**). We recommend for every OBM LS deployment assigning location port numbers starting from 26001 (i.e., recommended port numbers are 26001, 26002, 26003, etc.).
- Location data will be stored at a physical location pointed-to by the **Directory** field. This field can contain either an absolute local hard drive path in canonical Windows format (<drive>:\<path>) or an absolute network path in \\<server>\<path> format. To change the location data destination enter the desired path or click "..." button and navigate to an existing target directory.

To configure additional locations use the "Add" button found on the OBM Location Service Settings dialog (Figure 8). After changing location configurations, press OK to exit the configuration dialog.

Note: Restart the OBM LS Windows service as described in the following section after making changes to the location server configuration.

Starting and stopping OBM Location Service

By default, the OBM LS installer sets the server to start automatically at system startup; however, each location configuration change requires a service restart in order for the change to take effect. Restarting the service can be performed using either the OBM Location Service Manager or by employing Windows components (when the former way method not possible due to the hosting server configuration).

Using OBM Location Service Manager

To start or stop the OBM LS Windows service, right-click the OBM Location Service Manager icon located in the system tray. In the popup menu choose the first option to start/stop the service. Please note that this menu is context-dependent (i.e., if the service is currently running the menu item will read: "Stop OBM Location Service" whereas if the service is stopped, the item will read "Start OBM Location Service").

Local server policies may prevent the OBM Location Service Manager from starting/stopping the OBM LS Windows service. In this case, the menu item may be dimmed or choosing the start/stop menu action may display an error dialog. This is by design. If this occurs, use the Windows Service Control Manager or Windows command prompt tools to start/stop the service as described below.

Using Windows Tools to Start/Stop the Location Service

Navigate to the Service Control Manager applet in the Control Panel, launch the applet, and then locate the service entry named "OBM Location Service". Right-click on the entry and select either **Start** or **Stop**. Alternatively, use Windows command prompt commands:

```
net start "OBM Location Service"
net stop "OBM Location Service"
```

to start/stop the service respectively.

Please note that you must be logged-in with a user account with appropriate permissions to start/stop the OBM LS.

Uninstalling OBM Location Service

To uninstall the OBM LS, stop the service (as described above) and exit the OBM Location Service Manager (located in the System Tray), then navigate to Control Panel->Uninstall a Program. Locate "OBM Location Service" among the installed software. Double click the item and confirm uninstallation. Please note, as mentioned earlier, uninstalling the location service does not remove the OBM LS configuration file or any location data.

Troubleshooting

The most common cause of OBM deployment misbehavior is the inaccessibility of server ports from the client side (e.g., either a Bedside unit or Viewer). If the client cannot access a configured location, use following troubleshooting steps:

1. Using the 'ping' utility from the Client computer, make sure that the Server is accessible via TCP/IP. If the server is not accessible, make relevant changes to the network configuration of the Client (contact your IT department for specific instructions).
2. On the Server, make sure that OBM Location Service is running. Use the Microsoft Management Console Services applet to do so.
3. Using the 'netstat' utility from the Windows command prompt on the server (with parameter /a), make sure that configured ports of the OBM Location Service are exposed.
4. If a Firewall is present, ensure access is permitted to exposed OBM Location Service ports.

Configuration Primer

Let's consider a new installation of OBM ES™ in **ACME** Hospital. The installation should support the following use cases:

- NICU has 3 OBM BUs. All completed OBM sessions are archived to a secure server.
- Dr. Jones is a staff neonatologist at **ACME**. He needs to have access to running OBM Sessions in the NICU from his workstation.
- Sometimes Dr. Jones wants to consult Dr. Smith regarding interpretation of aEEG.
- Dr. Jones also participates in a clinical study based on OBM data in cooperation with Dr. Smith. During the course of the study, Dr. Jones prepares a subset of completed OBM sessions for further specific analysis, based on a certain demographic criteria.
- Dr. Smith resides in a different city and visits **ACME** once a week. He performs statistical analysis on OBM session data using his personal laptop. He exports session data in the popular EDF+ format.

OBM ES™ Deployment

The deployment diagram below shows how these use cases can be supported by OBM ES™

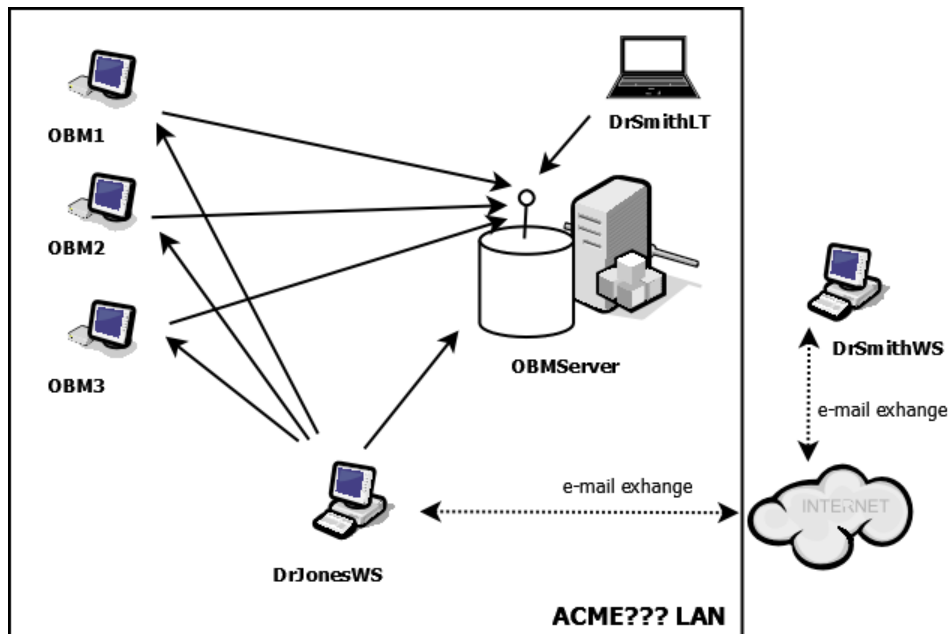


Figure 10 Primer - deployment

On the diagram:

- OBM1, OBM2 and OBM3 are three Olympic Brainz Monitors deployed in the NICU.
- OBMServer is a dedicated OBM ES™ server hosting OBM archive and study sandbox locations.
- DrJonesWS is Dr. Jones's workstation located in ACME hospital. It runs OBM Viewer software.

- DrSmithWS is Dr. Smith's workstation located off-site. It doesn't have any OBM-related software installed.
- DrSmithLT is Dr. Smith's research laptop with OBM Viewer installed. It is connected to the ACME LAN during Dr. Smith visits to the Hospital.

Locations configuration

Figure 10 shows one possible configuration of various OBM LSs necessary to support these stated use cases:

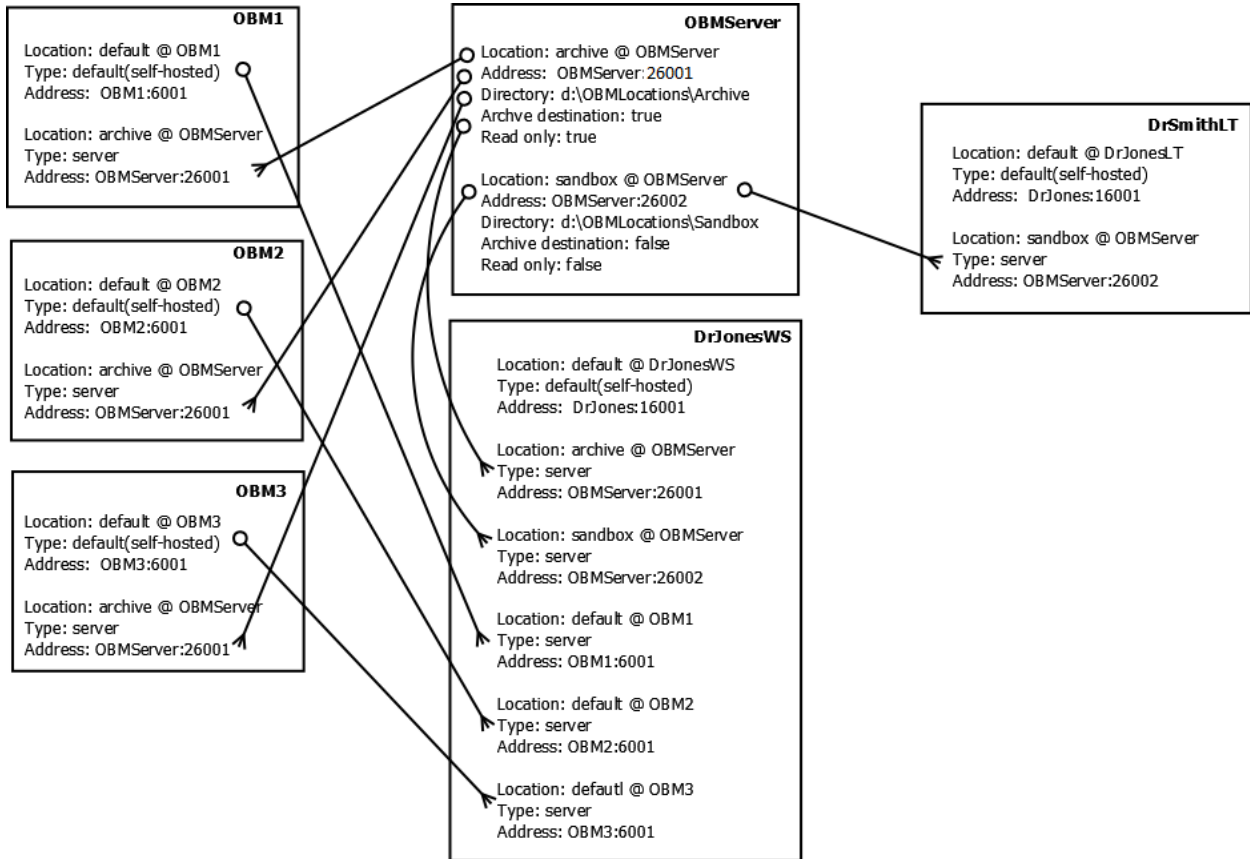


Figure 11 Locations configuration

Use Cases Implementation Workflows

Based on the deployment and location configuration schemas illustrated above, these use cases can be implemented as follows:

Use case: NICU has 3 OBM BUs. All completed OBM sessions are archived on a secure server.

Implementation:

- OBM BUs are configured to point to an archive location residing on OBMServer.

- NICU nurses are instructed to initiate session archiving on session completion (see OBM Bedside Unit documentation)

Use case: *Dr. Jones is a staff neonatologist at ACME. He requires access to running OBM Sessions in the NICU from his workstation.*

Implementation:

- According to the locations configuration shown in Figure 10, Dr. Jones has access to running sessions on any of OBM BUs in the NICU (see OBM Viewer documentation for details)

Use case: *Sometimes Dr. Jones wants to consult Dr. Smith regarding interpretation of aEEG.*

Implementation:

- Dr. Jones connects to a session of interest either on an OBM BU or in the archive location using OBM Viewer software running on his workstation.
- He creates a study snapshot and exports it to a USB drive connected to his Viewer workstation.
- He copies the snapshot from his USB drive and sends it to Dr. Smith via e-mail.
- Dr. Smith contacts Dr. Jones to discuss the case.

Use case: *Dr. Jones participates in a clinical study based on OBM data in cooperation with Dr. Smith. During the course of the study Dr. Jones prepares a subset of completed OBM sessions for further specific analysis, based on a certain demographic criteria.*

Implementation:

- Using OBM Viewer running on his workstation, Dr. Jones periodically connects to the archive location on OBMServer.
- Using a filter facility of the Viewer he selects a set of newly performed sessions which satisfy the study criteria.
- He selects all the sessions in the filtered set and exports them to the OBMServer sandbox location (sandbox @ OBMServer)

Use case: *Dr. Smith resides in a different city from ACME and visits the Hospital once a week. He performs statistical analysis of OBM sessions data on his laptop, using tools supporting the popular EDF+ format.*

Implementation:

- While visiting ACME, Dr. Smith logs-in to the ACME LAN and then connects to the sandbox location on OBMServer using the Viewer installed on his laptop (making the 'sandbox' his current location).

- He selects all sessions residing in the sandbox location and exports them to the default location of his Viewer (thus copying the sessions from the network to his laptop).
- To avoid session duplication he then deletes all sessions from sandbox @ OBMServer location using the OBM Viewer (he is able to do this because he has connected to the sandbox as his current Viewer location).
- Later he launches the viewer and performs a report-to-file for each session in EDF+ format for further processing (selecting a removable USB storage device as the report-to-file destination).

OBM ES™ in Citrix® Environment

Deploying OBM ES™ in a Citrix environment further simplifies managing installation of multiple review workstations. Figure 4 shows an overall layout of such a deployment. This section provides some details and recommendations regarding deployment of OBM ES™ and OBM Viewer components on Citrix XenApp appliances.

Installing the OBM Location Service

Installing and configuring OBM LS for use with Viewers running in a Citrix environment does not differ from the process described in the section 'Installing OBM Location Service'; however, we do not recommend running an instance of the OBM LS on the Virtual Machine (VM) used to run Citrix XenApp. Rather, install and run OBM LS on a separate server or Virtual Machine.

While configuring OBM LS on a server, make sure that all relevant firewalls are configured to allow access to the server ports designated for each configured location (i.e., default ports 26001, 2, 3...).

Installing and Configuring OBM Viewer

The OBM Viewer is the client-side face of OBM ES operating in a Citrix deployment. The current version of OBM Viewer does not support Application Streaming in a Citrix environment; therefore the installation of the Viewer on a XenApp appliance should be performed for Application Hosting as follows:

1. Install OBM Viewer on the target XenApp appliance as described in OBM Viewer documentation.
2. Using Citrix Delivery Services Console, publish OBM Viewer as a hosted, installed application (Figure 12).

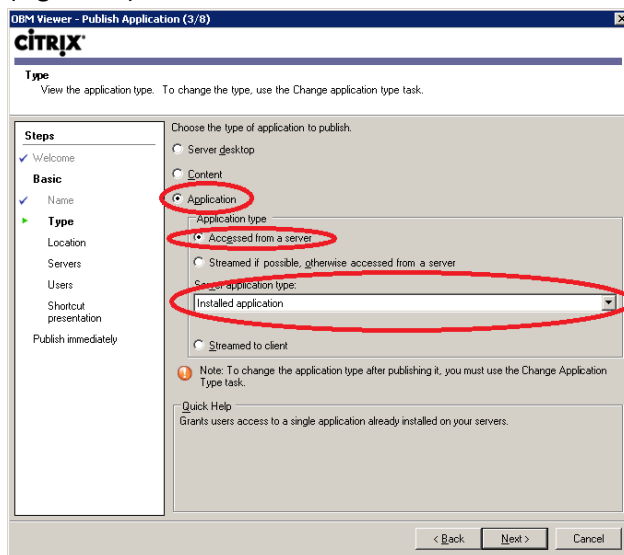


Figure 12 OBM Viewer published application type

3. Make sure that the published copy of the Viewer runs *without* hosting its own location. To do so use the `"/u"` switch in the application startup command line:

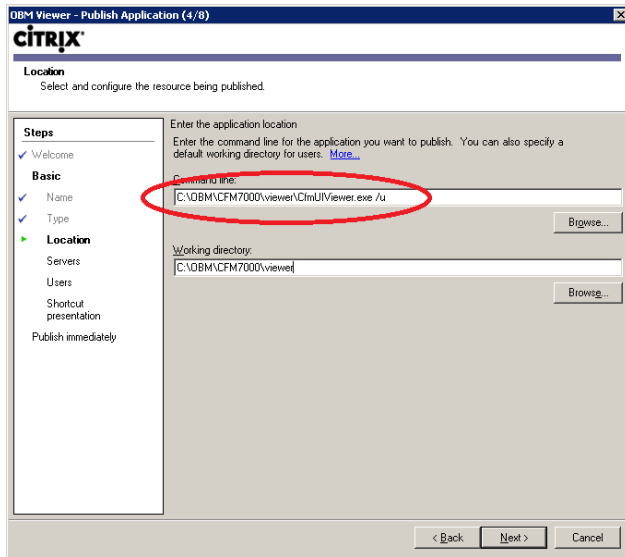


Figure 13 OBM Viewer starting in location-less mode

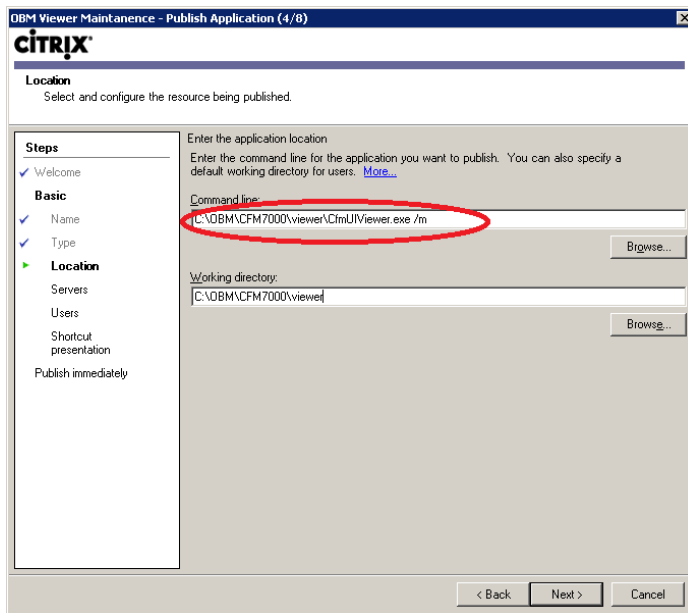
After completing the publishing process, the OBM Viewer becomes accessible to XenApp clients.

Note: Before users can access the application it is necessary to configure available locations.

Note: When running the OBM Viewer on a XenApp appliance, please disable the default USB location for the Viewer.

Per-user location configuration

Depending on your enterprise requirements it might be feasible to provide each user with a means to configure his/her own set of locations. To make this possible, publish OBM Viewer Maintenance Mode alongside the OBM Viewer Clinical mode. For invocation in Maintenance mode, publish a separate 'application' as above but using OBMUIViewer.exe with the `"/m"` switch in the command line – Name this 'OBM Viewer Maintenance' application:



Any user accessing the published OBM Viewer software must configure locations of interest using published OBM Viewer Maintenance, similarly to the procedure described in OBM Viewer documentation for desktop deployment.

Alternatively, it is possible to pre-configure a default set of Locations for all users as described below.

Please remember to disable the default USB location for Viewers hosted on a XenApp appliance. Also note that a hosted Viewer will claim to have a 'default' location; however, the 'default' location will not actually exist. Selecting it from the Viewer's location selection overlay will simply put the Viewer into a 'waiting' state. To avoid confusion, rename the default location something like 'NOT AVAILABLE' or 'DO NOT USE'.

Pre-configuring a default set of locations for all users

The following steps assume that every user requiring access to the OBM Viewer has his own local profile on the XenApp appliance, i.e. that each user has logged in to the appliance at least once.

1. From the XenApp console run OBM Viewer Maintenance mode as per OBM Viewer documentation. Add and configure the desired Server Location(s) to access OBM LSs and/or OBM BUs installed anywhere in the network accessible from the XenApp instance. While configuring locations, disable the default USB location (Figure 14) and name the 'Local description' of the default location 'DO NOT USE' (or 'NOT AVAILABLE') as noted above.

Note: Exporting to USB devices is not possible when operating on a Citrix appliance.

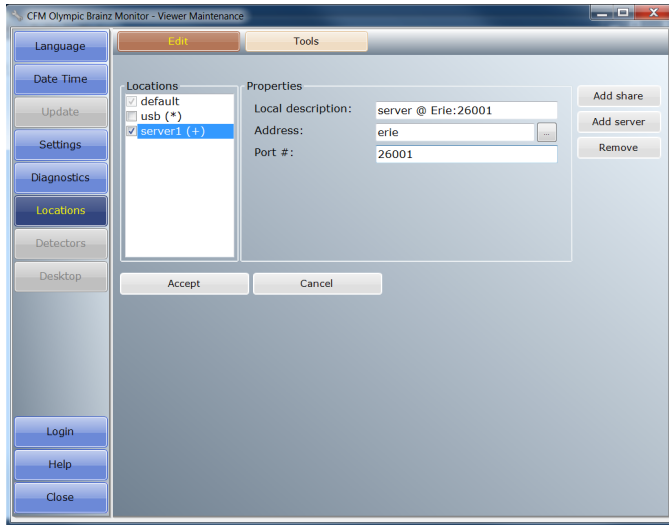


Figure 14 OBM Viewer locations configuration in Citrix environment

2. The resulting OBM Viewer settings file will be located in directory structure under `<Users>\<CurrentUser>\AppData\Local\Natus\<CfmUIViewer.exe_hash>` where:
 - `<Users>` - Windows Users directory
 - `<CurrentUser>` - login of the user performing the configuration task
 - `<CfmUIViewer.exe_hash>` - Hash-name of CfmUIViewer.exe settings directory*

* The name starts with `CfmUIViewer.exe_`

To provide a user with a pre-defined configuration, copy the whole content of the `<CfmUIViewer.exe_hash>` directory to the relevant location in the setting structure.

For example, assuming that the current user's login is `Administrator`, the target user's login is `ViewerUser1`, the hash-name of the template settings directory created at the first step is `CfmUIViewer.exe_Url_wqlm2vazxaeo22yybl3m5zc1qp5mzs5h` and the Windows Users directory is located at `C:\Users`, copy settings directory from:

```
C:\Users\Administrator\AppData\Local\Natus\  
CfmUIViewer.exe_Url_wqlm2vazxeao22yybl3m5zc1qp5mzs5h to  
C:\Users\ViewerUser1\AppData\Local\Natus\  
CfmUIViewer.exe_Url_wqlm2vazxeao22yybl3m5zc1qp5mzs5h
```

Accessing the Published OBM Viewer

An OBM Viewer published on a Citrix XenApp appliance can be accessed from any Citrix client using standard Citrix delivery tools (i.e. Citrix Receiver or a regular supported Web Browser). Please refer to the appropriate Citrix documentation for further details.

Accessing the Published OBM Viewer Maintenance

OBM Viewer Maintenance published on a Citrix XenApp appliance can be accessed from any Citrix client using standard Citrix delivery tools (i.e. Citrix Receiver or a regular supported Web Browser). Please refer to the appropriate Citrix documentation for further details.

Regarding Optional Password Protection of Viewer Maintenance Settings

The aforementioned method of copying Viewer configuration files between Windows users applies to all Viewer settings, not just to those relating to locations.

The OBM Viewer Maintenance mode supports optional password protection of its various configuration overlays. Password protection is tied to roles defined within the maintenance utility. Use this feature to control access to configuration overlays such as those used to modify pre-defined locations.

Note that if optional password protection is imposed through the OBM Viewer Maintenance utility, or if a 'guest' account is shared between multiple Citrix clients, the maintenance utility should be configured (in Citrix) to run only a single instance at any given time (see Citrix documentation for further information). This prevents two or more users of the maintenance utility from clobbering each other's optional password protection settings (as these settings are specifically shared between OBM Viewer instances running on the XenApp appliance).

One setting that you may consider exposing to all users is screen calibration (found in the Settings->Screen overlay of the maintenance utility). Screen calibration maps the Citrix Receiver's screen resolution to physical units of micro-volts or Ohms per unit of length. In a Citrix deployment, any given user may access the OBM Viewer from more than one physically distinct device and hence; a user may need to recalibrate 'on-demand'. Use optional password protection to configure the maintenance utility to expose Settings->Screen to each user.

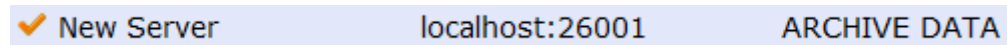
Regarding Screen Calibration and the use of the OBM Viewer with Citrix Delivery Tools

With the proliferation of mobile devices support Citrix delivery tools, it is technically possible to run the OBM Viewer as a client on devices running Android or iOS Operating Systems (as found on popular Smart Phones and Tablets). While this is technically achievable, the OBM Viewer has not been validated as a medical device in such scenarios and thus, this use case is not supported.


When selecting a platform to run Citrix delivery tools, make sure it has sufficient resolution and color depth to correctly render a 3 hour window of aEEG. Once the platform is configured, review several sessions illustrating a variety of known pathologies. Confirm your ability to interpret said pathologies, noting the quality of the rendered aEEG and EEG and the accuracy of color reproduction for scored tracks.

Read-Only Indicators in the OBM UI

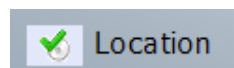
There are several UI indicators of a location’s read-only status. In the OBM Viewer *Location Selection* dialog (as well as in other location picker dialogs such as import and export), a location designated as *read-only* will appear with an amber checkmark:



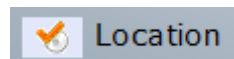
Similarly, in *Tools->Files* and *Tools->Archive* overlays, an amber checkmark beside the word ‘Location’ indicates that this location has its read-only property set (otherwise the checkmark appears green).

 Location A readonly archive location for OBM testing (localhost:26003)		
	Active sessions	Trashed sessions
Number of sessions	1	0
Space occupied (MB)	57	0
Space occupied (%)	0	0
Total available (MB)	69,663	

If the location is read-only due to the underlying media (such as a CD-ROM) or due to a file system for which the user does not have write permissions, the indicator has a little CD-ROM image affixed to the checkmark:



If such a location also has the ‘Read-Only’ policy set in the maintenance utility, its checkmark will show as amber in color:



To recap, amber means ‘read-only’ by location policy, while a ‘CD-ROM’ icon means ‘read-only’ due to the underlying media.