



## Panasas Global Services: Technical Education

# PanFS System Advanced Troubleshooting

The PanFS® System Advanced Troubleshooting course builds upon the knowledge gained in the PanFS System *Administration Certification* course, which is a prerequisite for this course. Upon successful completion of this course, the student will be able to function as the subject matter expert for Panasas ActiveStor® within their organization. The curriculum covers troubleshooting and system management, with a special emphasis on obtaining a deeper understanding of object-based storage concepts, theory, and advanced troubleshooting.

File and object layout is discussed in further detail so that performance optimizations and trade-offs can be considered. Bladeset and volume layout is addressed as it relates to overall file-system performance, and details on how to collect client/system tracing are demonstrated. Finally, Panasas high availability software features are detailed to include implementation and troubleshooting.

### Modules Included

- Advanced troubleshooting of Director Hardware, Network, Repset, Mconsole, and Volume Services
- Enhancing Performance, File Object Layout, Client Issues, Volume Metadata, and System and Client Tracing
  - Slow OSDs, Reconstruction, OSD Revive, Extended File System Availability, Volume Rescue, and FSRC
  - Benchmarking, Upgrade, Data Migration and Site Replication, Object ACLs, Name Resolution, CIFS, and NFS
  - Hands-on Troubleshooting Exercises

### Prerequisites

Successful completion of Panasas PanFS System Administration Certification course.

All attendees must have a basic understanding of:

- General IP Networking
- Disk RAID concepts
- Familiarity of NFS and/or file-system usage
- Experience interfacing with UNIX® and/or Linux®

### Equipment

Each student participates in hands-on lab exercises using Panasas equipment. Students are required to bring a laptop or suitable portable device with wire-less capability and an ssh client installed (such as PuTTY).

### Target Audience

- Storage Administrators
- Storage Network Engineers
- Storage Specialists
- Data Center Operators

### Instructor-Led Training

Courses are delivered to attendees via the internet. Regardless of location or delivery model, all training classes are facilitated by Panasas personnel with diverse, hands-on technical backgrounds. Panasas equipment is used with course content directly developed by the Panasas Global Services team. Panasas equipment is used with course content directly developed by the Panasas Global Services team.

**To learn more about the training programs and options available, email us at [training@panasas.com](mailto:training@panasas.com)**

Panasas On-Site Course Details	
Course Title	PanFS System Advanced Troubleshooting
Course Number	EDU-ADVTRBL-PAN4
Delivery Method	Instructor-led
Location	Panasas offices in either Pittsburgh, PA, or Sunnyvale, CA
Content	Training book, hands-on labs
Duration	Four days
Price	Email <a href="mailto:training@panasas.com">training@panasas.com</a> for quote
Min. Class Size	4
Max. Class Size	10
Frequency	Once every 6 months

Customer On-Site Course Details	
Course Title	PanFS System Advanced Troubleshooting
Course Number	EDU-ADVTRBL-CL4
Delivery Method	Instructor-led
Location	Customer Site
Content	Training book, hands-on labs
Duration	Four days
Price	Email <a href="mailto:training@panasas.com">training@panasas.com</a> for quote
Min. Class Size	1
Max. Class Size	12
Frequency	As required
Requirements	Customer to supply Panasas shelves and clients
Panasas supplied equipment	Remote access to Panasas equipment

## Student Cancellation Policy

Individual training registrants cancelling a scheduled class at a Panasas facility have the option to register for another class or receive a full refund, provided Panasas is notified at least 14 calendar days before the course start date. Any cancellation made within two weeks of the scheduled class start date will be charged the full training course fee. Registration may be transferred to another student, provided that student possesses adequate knowledge of the prerequisite course material.

## Cancellation For Customer Site Training Sessions

Customers can cancel or reschedule customer site training without penalty up to 14 calendar days prior to the course start date. Full charges will apply if a cancellation is made fewer than 14 calendar days before the course start date.

## Course Cancellation Policy By Panasas

Panasas requires a minimum of four students per class for training to be delivered at a Panasas facility. We reserve the right to change course schedules, modify course content, or cancel a class when necessary.

If we elect to cancel a class, we will make every effort to notify all registrants a minimum of 14 days prior to the scheduled start date. Panasas is not responsible for airline or hotel penalties incurred because of canceled courses.

## Prerequisites

Students are responsible for complying with all prerequisite material. Students who demonstrate a gap in the prerequisite knowledge may be requested to limit questions during class time as to not impede the overall progress of the class.

## Class Participation

Attendance is the responsibility of the registrant.

In order to successfully complete a course, 100% attendance is required. If a registrant fails to appear for a scheduled class, or fails to complete the entire course, the full course fee is still charged.

## Confirmation

Panasas will send you a confirmation letter upon registration. We recommend that you bring it to class to confirm class attendance eligibility.

## Contact

To learn more about the training programs and options available, email us at [training@panasas.com](mailto:training@panasas.com)