

# SNIA Emerald™ Training Event

## Enterprise Storage IO Primer

Monday, July 14, 2014

1:00pm - 5:15pm (Mountain Daylight Time)

Sterling Room, Avago Technologies

Colorado Springs, CO

Time	Duration	Topic	Presenter
1:00 - 1:10 PM	10	Attendee introductions and facility logistics	Wayne Adams
1:10 - 1:20 PM	10	Training overview and objectives	Leah Schoeb
1:20 - 2:45 PM	85	<b>Part 1</b> Storage Basics. Components of Enterprise Storage; HDD, SSS, Cache, PSU; data stored as block, file, object; storage networks	Leah Schoeb
2:45 - 3:00 PM	15	<i>Break</i>	
3:00 - 3:45 PM	45	<b>Part 2</b> Characteristics of Enterprise Storage	Leah Schoeb
3:45 - 4:30 PM	45	<b>Part 3</b> Storage IO Performance Basics	Leah Schoeb
4:30 - 5:00 PM	30	<b>Part 4</b> Introduction to COMs. Capacity Optimization Techniques	Alan Yoder
5:00 - 5:15 PM	15	Wrap-up, questions, evaluation	Leah Schoeb Alan Yoder
5:15 - 6:00 PM	45	<i>Travel time to SNIA Technology Center + Tech Center storage array tour</i>	Wayne Adams Leah Schoeb
6:00 - 7:00 PM	60	Beer and wine reception at SNIA Tech Center (optional)	All Attendees

# SNIA Emerald™ Training Event

## Power Meter Workshop

Monday, July 14, 2014

1:00pm - 5:40pm (Mountain Daylight Time)

SNIA Technology Center

Colorado Springs, CO

Time	Duration	Topic	Presenter
1:00 - 1:10 PM	10	Attendee introductions and facility logistics	Erin Weiner
1:10 - 1:20 PM	10	Training overview and objectives	Larry Sharp
1:20 - 3:20 PM	120	Power theory, measuring power, power meter features and capabilities, AC power source	Larry Sharp
3:20 - 3:45 PM	15	<i>Break</i>	
3:45 - 4:10 PM	25	Storage Power Measurement	Patrick Stanko
4:10 - 5:10 PM	60	Live SUT with focus on Powermeter hookup and SNIA Emerald measurements	Dennis Martin
5:10 - 5:25 PM	15	Powermeter hookup to 3 phase power	Larry Sharp
5:25 - 5:40 PM	15	Wrap-up questions, evaluations	Larry Sharp Dennis Martin Patrick Stanko
5:40 - 6:00 PM	20	Tech Center Enterprise Storage array tour; meet other students from Storage Primer	Wayne Adams Leah Schoeb
6:00 - 7:00 PM	60	Beer and wine reception at SNIA Tech Center (optional)	All Attendees

**SNIA Emerald™ Training Event**  
**Tuesday, July 15, 2014**  
**8:00am - 5:15pm (Mountain Daylight Time)**  
**Sterling Room, Avago Technologies**  
**Colorado Springs, CO**

<b>Time</b>	<b>Duration</b>	<b>Topic</b>	<b>Presenter</b>
8:00 - 8:15 AM	15	Attendee introductions and facility logistics	Wayne Adams
8:15 - 8:25 AM	10	Training Overview of 3 days and Day 1 Overview	Wayne Adams
8:25 - 8:55 AM	30	ENERGYSTAR Overview and relation to SNIA Emerald Program	Herb Tanzer Carlos Pratt
8:55 - 9:25 AM	30	SNIA Emerald Power Efficiency Measurement Specification 2.0.2 Overview	Patrick Stanko
9:25 - 10:10 AM	45	Overview of ENERGYSTAR Storage Specification and ENERGYSTAR Data Center Program	RJ Meyer John Clinger
10:10 - 10:25 AM	15	<i>Break</i>	
10:25 - 10:45 AM	20	Contrast differences of testing and reporting for SNIA Emerald and ENERGYSTAR Programs	Don Goddard
10:45 - 11:15 AM	30	Overview- what aspects of Storage are being tested and why	Herb Tanzer
11:15 - 11:45 AM	30	SNIA Emerald Storage Taxonomy	Patrick Stanko
11:45 AM - 12:00 PM	15	Storage Power Measurement	Patrick Stanko
12:00 - 12:30 PM	30	SUT Config Overview and setup (classroom)	Dennis Martin
12:30 - 1:15 PM	45	<i>Lunch</i>	
1:15 - 1:45 PM	30	Vdbench Overview	Steve Johnson
1:45 - 2:15 PM	30	SNIA Vdbench Emerald Overview	Steve Johnson
2:15 - 3:00 PM	45	SNIA Emerald Best Foot Forward	Herb Tanzer Jim Espy
3:00 - 3:15 PM	15	<i>Break</i>	
3:15 - 4:00 PM	45	Vdbench Script Configuration for Emerald	Chuck Paridon Dennis Martin
4:00 - 4:15 PM	15	SNIA Emerald Hot Banding	Steven Johnson
4:15 - 4:30 PM	15	Hot Band Workloads and High End Storage Products	Chuck Paridon
4:30 - 5:00 PM	30	COM Verification	Alan Yoder
5:00 - 5:15 PM	15	Q&A, Day 1 class evaluation	
5:15 PM		end of day	
7:00 PM		Team Dinner (Phantom Canyon Brewery)	All Participants

**SNIA Emerald™ Training Event**  
**Wednesday, July 16, 2014**  
**8:00am - 4:45pm (Mountain Daylight Time)**  
**SNIA -and- Sterling Room, Avago Technologies**  
**Colorado Springs, CO**

<b>Time</b>	<b>Duration</b>	<b>Topic</b>	<b>Presenter</b>
8:00 - 8:15 AM	15	Day 2 Overview and Q&A ; <b>(at SNIA Tech</b>	Wayne Adams
8:15 - 10:15 AM	120	<b>Workbench Lab Activities (2+ hours at Tech Center)</b>	Dennis Martin Chuck Paridon Herb Tanzer
Topics covered in lab include:		Review all SUT for physical configuration	
		VDBench Script Editing and Run against SUT	
		Review and verify power meter, temp sensor are working	
		Run COM Test	
		When things go wrong, how do you know, how to recover and remedy	
		SUT setup, observations, and test measurement differences for ENERGYSTAR and SNIA Emerald	
10:15 - 10:40 AM	25	<b>Break and travel time to Sterling Room at Avago Technologies</b>	
10:40 - 11:25 AM	45	80 Plus Program - power supply efficiency testing and program listing	Doug McIlvoy
11:25 - 11:58 AM	23	SNIA Emerald Vdbench rules of Thumb	Steve Johnson
11:58 AM - 12:10 PM	22	Emerald Physical SAN Configuration Rules of	Chuck Paridon
12:10 - 1:00 PM	50	<i>Lunch</i>	
1:00 - 1:45 PM	45	Preview of summarized data - how a SNIA Emerald test run should look	Chuck Paridon
1:45 - 2:30 PM	45	Raw data reduction, merge tool, summarized results	Alan Yoder
2:30 - 2:45 PM	15	<i>Break</i>	
2:45 - 3:45 PM	60	Analyze data for optimal results, mistakes	Chuck Paridon Carlos Pratt
3:45 - 4:30 PM	45	Common mistakes to avoid, lessons learned on running the tests and reviewing the data	Chuck Paridon Carlos Pratt
4: 30 - 4:45 PM	15	Q&A Day 2 class evaluation	
4:45 PM		end of day	
5:30 - 7:30 PM	120	(Optional) 1x1 time in Tech Center; SUT, Vdbench Light dinner provided for 1x1 sessions only	Dennis Martin Chuck Paridon Herb Tanzer Steve Johnson

# SNIA Emerald™ Training Event

Thursday, July 17, 2014

8:00am - 4:30pm (Mountain Daylight Time)

Sterling Room, Avago Technologies

Colorado Springs, CO

Time	Duration	Topic	Presenter
8:00 - 8:15 AM	15	Day 3 Overview and Q&A	Wayne Adams
8:15 - 8:30 AM	30	Creating a SNIA Emerald Test Data Report	Dave Thiel
8:45 - 9:45 AM	60	Open Discussion for data entry with ENERGYSTAR Data Storage Program	RJ Meyer John Clinger EPA IT
9:45 - 10:00 AM	15	<i>Break</i>	
10:00 - 11:00 AM	60	Case Study #1 Lessons learned , mfger and ind lab(NetApp/Demartek)	Don Goodard Dennis Martin
11:00 - 11:30 AM	30	Case Study #2 Lessons Learned, mfger (HP)	Herb Tanzer Thomas Ellison
11:30 AM - 12:00 PM	30	Case Study #3 Lessons Learned, mfger (IBM)	Carlos Pratt
12:00 - 12:45 PM	45	<i>Lunch</i>	
12:45 - 1:00 PM	15	Case Study #4 Lessons Learned, mfger (EMC)	tbd
1:00 - 1:20 PM	20	Case Study #6 Lessons Learned, CB/Ind lab (UL)	Jarid Strike
1:20 - 1:40 PM	20	Case Study #7 Lessons Learned, CB/Ind Lab (MET)	Sam Tetteh
1:40 - 2:00 PM	20	Case Study #8 Lessons Learned, CB/Ind Lab (TUV)	Uwe Meyer
2:00 - 2:15 PM	15	<i>Break</i>	
2:15 - 3:15 PM	60	Roundtable of case studies ; Q&A	all
3:15 - 3:45 PM	30	SNIA Emerald Program	Dave Thiel
3:45 - 4:15 PM	30	SNIA Emerald Recognized Tester Program	Wayne Adams
4:15 - 4:30 PM	15	Q&A, day 3 class evaluations, post-class where to get help	Wayne Adams
4:30 PM		end of class	