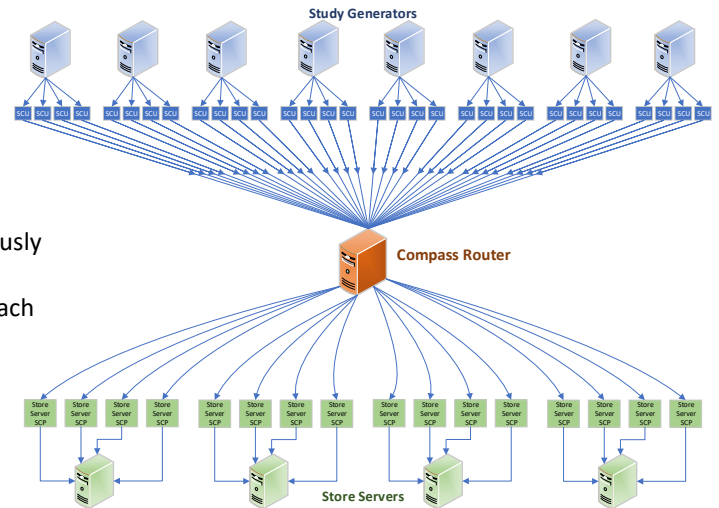


Tech Note: Compass Testing

Compass Performance Summary

System: virtual; 10 Gbps virtual network

- Compass 2.4.7 on: VM Server 2012, 2.60 GHz CPU, 8 cores, 32 GB RAM, 3 TB SSD
- Other server apps on: VM Windows 7, 64-bit, 2.60 GHz CPU, 8 cores, 8 GB RAM, 128 GB HD
- 32 Study Generators (SCUs) sending continuously w/no delays (8 servers running 4 each)
- 16 Store Servers (SCPs): 4 servers running 4 each
- 4 HL7 Senders & Receivers per system
- Average of multiple 60-minute runs
- Test: Nov. 21, 2017



Max Throughput – DICOM only

How fast can data be pushed through Compass?

Compass Config	Study Profile	Data Rate		Studies /hr	Images /hr
		GB/hr	Gbps		
Store & fwd, load bal.	US: 40 x 90 KB	72	0.160	20,972	838,880
	Mammo: 4 x 40 MB	391	0.869	2,499	9,996
	CT: 100 x 515 KB	330	0.733	6,725	672,500
Direct, load bal.	US: 40 x 90 KB	131	0.291	38,070	1,522,800
	Mammo: 4 x 40 MB	2,118	4.707	13,552	54,208
	CT: 100 x 515 KB	758	1.684	15,443	1,544,300

Throughput Observed with HL7 Overhead Added

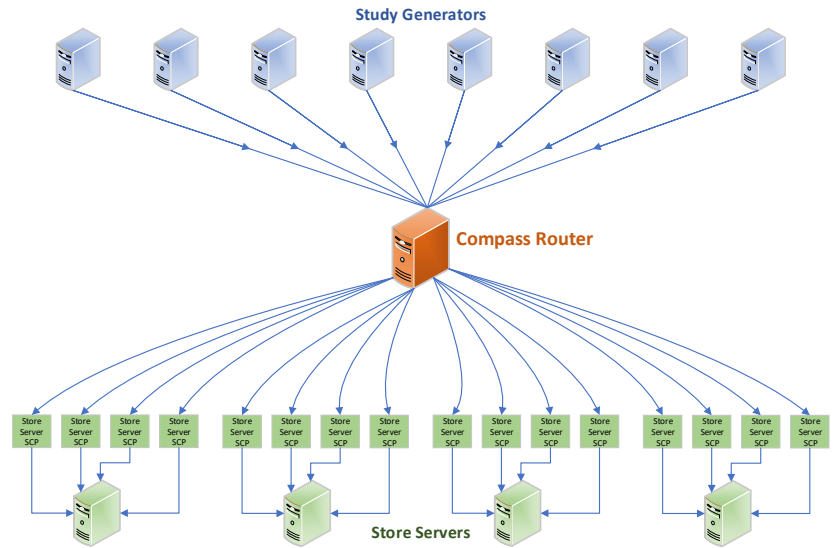
How much overhead does HL7 traffic to Compass introduce when added to the scenarios above?

Compass Config	Study Profile	HL7 msgs/hr	Observed Gbps	Studies /hr	Overhead Percent
Store & fwd, load bal.	US: 40 x 90 KB	0	0.160	20,972	
		1,024	0.158	20,687	1.36%
		14,400	0.156	20,401	2.72%
	Mammo: 4 x 40 MB	0	0.869	2,499	
		1,024	0.851	2,452	1.88%
		14,400	0.829	2,387	4.48%
	CT: 100 x 515 KB	0	0.733	6,725	
		1,024	0.720	6,603	1.81%
		14,400	0.702	6,440	4.24%
Direct, load bal.	US: 40 x 90 KB	0	0.291	38,070	
		1,024	0.289	37,831	0.63%
		14,400	0.287	37,563	1.33%
	Mammo: 4 x 40 MB	0	4.707	13,552	
		1,024	4.647	13,381	1.26%
		14,400	4.569	13,156	2.92%
	CT: 100 x 515 KB	0	1.684	15,443	
		1,024	1.676	15,360	0.54%
		14,400	1.644	15,057	2.50%

Compass Performance Summary

System: virtual; 10 Gbps virtual network

- Compass 2.4.7 on: VM Server 2012, 2.60 GHz CPU, 8 cores, 32 GB RAM, 3 TB SSD
- Other server apps on: VM Windows 7, 64-bit, 2.60 GHz CPU, 8 cores, 8 GB RAM, 128 GB HD
- 8 Study Generators (SCUs), one per server: sending continuously w/delays, separate association per study
- 16 Store Servers (SCPs): 4 servers running 4 each
- Average of multiple 15-minute runs
- Test: Jan. 2018



Transcoding Performance

What is the impact of transcoding on the CPU & memory usage for the system and application?

For CT testing below, the study generators were configured to achieve a load of ~34,000 CT images per hour.

Transcode mode: JPEG .90 to ELE					System			App	Send Delay		
Description		Input Data Rates			CPU	Mem	Mem	Introduced			
SCUs	SCPs	Duration	Input	Input	Avg	Avg	Avg				
Gens	Srvrs	Study Profile	Compass Routing Mode	of test	Imgs/hr	GB/hr	Gbps	Pct.	Pct.	MB	secs/img
8	16	CT: 100 x 515 KB	Direct (load bal), pass-thru	0:15:00	34,528	18.21	0.040	1.2%	8%	139	0.675
8	16	CT: 100 x 515 KB	Direct (load bal), transcode	0:15:00	34,327	18.10	0.040	14.3%	8%	155	0.540
8	16	CT: 100 x 515 KB	Store & Forward, pass-thru	0:15:00	34,522	18.21	0.040	1.6%	8%	108	0.660
8	16	CT: 100 x 515 KB	Store & Forward, transcode	0:15:00	34,678	18.29	0.041	7.5%	8%	123	0.660