Name	CPU capacity	Memory capacity	Additional Net	Image Type	CPU Speed (GH	Net Speed(Mbp	Zone	Hour 1 (8:00-9:00)	Hour 2 (9:00-10:00)	Hour 3 (10:00-11:00)	Hour 4 (11:00-12:00)	Hour 5 (12:00-13:00)	Hour 6 (13:00-14:00)
CU	20	40	ENT/IPOP	CENOS/ROCK	2.8	600	4	10,30	10,20	20,40	20,40	20,40	20,40
KU	16	32	-	CENOS/ROCK	2.3	1000	1	16,32	16,32	16,32	16,32	6,10	6,10
SWU	6	12	-	CENOS	2.4	90	3	2,2	2,2	6,12	6,12	6,12	6,12
TU	4	16	ENT	CENOS/ROCK	2.8	1000	1	4,16	4,16	2,2	2,2	4,16	2,8
UCSD	128	512	ENT/IPOP	ROCK	3.5	10000	2	28,112	128,512	128,512	20,40	20,40	20,40
UF	128	256	IPOP	CENOS/ROCK	3.5	10000	2	128,256	128,256	128,256	28,56	28,56	128,256
								*available cpu,memory					

Case 1

Search for:

No. of sites = Any, CPU=20, Mem=40, Additional Net=None, Image=ROCK, Time begin=8:00, Time end=10:00, Duration=From begin to end

Flow:

1) Check for sites that match Additional Net = None and Image = ROCK --> CU, KU, TU, UF,UCSD

2) Start with 2 sites: resource demand CPU=10, Mem=20 on each site

2.1) Check for sites that has capacity for the resource demand --> CU, KU, UF,UCSD

2.2) For each site, check available cpu,memory > demand during the time specified by the user (Hour1 and Hour2) -> CU, KU, UCSD,UF

2.3) Create combination as results --> CU+KU,CU+UCSD, CU+UF, KU+UCSD,KU+UF,UCSD+UF

Results:

Sites	*CPU Needed*	*Total CPU Avail./Capacity*	*Mem Needed*	*Total Mem Avail./Capacity*	*CPU Speed*	*Network Speed*	*Additional Net*	*Image Types*	*Time Begin*	*Time End*
CU(4)+KU(1)	10:10	26/36	20:20	52/72	2.3	600	-	ROCK	8:00	10:00
CU(4)+UCSD(2)	10:10	38/148	20:20	132/552	2.8	600	ENT/IPOP	ROCK	8:00	10:00
CU(4)+UF(2)	10:10	138/148	20:20	276/296	2.8	600	IPOP	ROCK	8:00	10:00
KU(1)+UCSD(2)	10:10	46/144	20:20	144/544	2.3	1000	-	ROCK	8:00	10:00
KU(1)+UF(2)	10:10	144/144	20:20	288/288	2.3	1000	-	ROCK	8:00	10:00
UCSD(2)+UF(2)	10:10	156/256	20:20	156/768	3.5	10000	IPOP	ROCK	8:00	10:00

Case 2

Search for:

No. of sites = Any, CPU=20, Mem=40, Additional Net=IPOP, Image=ROCK, Time begin=8:00, Time end=10:00, Duration=From begin to end

Flow:

1) Check for sites that match Additional Net = None and Image = ROCK --> CU, UCSD, UF

2) Start with 2 sites: resource demand CPU=10, Mem=20 on each site

2.1) Check for sites that has capacity for the resource demand --> CU, UCSD, UF

2.2) For each site, check available cpu,memory > demand during the time specified by the user (Hour1 and Hour2) -> CU,UCSD,UF

2.3) Create combination as results --> CU+UCSD,CU+UF,UCSD+UF

Results:

Sites	*CPU Needed*	*Total CPU Avail./Capacity*	*Mem Needed*	*Total Mem Avail./Capacity*	*CPU Speed*	*Network Speed*	*Additional Net*	*Image Types*	*Time Begin*	*Time End*
CU(4)+UCSD(2)	10:10	38/148	20:20	142/552	2.8	600	IPOP	ROCK	8:00	10:00
CU(4)+UF(2)	10:10	138/148	20:20	286/296	2.8	600	IPOP	ROCK	8:00	10:00
UCSD(2)+UF(2)	10:10	156/256	20:20	368/768	3.5	10000	IPOP	ROCK	8:00	10:00

Case 3

Search for:

No. of sites = Any, CPU=20, Mem=40, Additional Net=None, Image=ROCK, Time begin=8:00, Time end=12:00, Duration=2 hours

Flow:

1) Check for sites that match Additional Net = None and Image = ROCK --> CU, KU, TU, UF

2) Start with 2 sites: resource demand CPU=10, Mem=20 on each site

2.1) Check for sites that has capacity for the resource demand --> CU, KU, UF

2.2) For each site, check available cpu,memory > demand during the time specified by the user (Hour1 and Hour2) -> CU, KU, UF

2.3) Create combination as results --> CU+KU, CU+UF, KU+UF

Results:

Sites	*CPU Needed*	*Total CPU Avail./Capacity*	*Mem Needed*	*Total Mem Avail./Capacity*	*CPU Speed*	*Network Speed*	*Additional Net*	*Image Types*	*Time Begin*	*Time End*
CU(4)+KU(1)	10:10	26/36	20:20	52/72	2.3	600	-	ROCK	8:00	10:00
CU(4)+UF(2)	10:10	138/148	20:20	286/296	2.8	600	IPOP	ROCK	8:00	10:00
KU(1)+UF(2)	10:10	144/144	20:20	288/288	2.3	1000	-	ROCK	8:00	10:00

Case 4

Search for:

No. of sites = Any, CPU=60, Mem=60, Additional Net=None, Image=ROCK, Time begin=11:00, Time end=13:00, Duration=From begin to end

Flow:

1) Check for sites that match Additional Net = None and Image = ROCK --> CU, KU, TU, UF,UCSD

2) Start with 2 sites: resource demand CPU=30, Mem=30 on each site

2.1) Check for sites that has capacity for the resource demand

2.2) But in 2.1 no pair have enougth resource

3) turn to start with 3 site resource demand CPU = 20 Mem = 20 on each site

3.1) Check for sites that has capacity for the resource demand -- CU ,UCSD,UF

3.2) Create combination as results --> CU+UCSD+UF

Results:

Sites	*CPU Needed*	*Total CPU Avail./Capacity*	*Mem Needed*	*Total Mem Avail./Capacity*	*CPU Speed*	*Network Speed*	*Additional Net*	*Image Types*	*Time Begin*	*Time End*
CU(4)+UCSD(2)+UF(2)	20:20:20	68/276	20:20:20	136/808	2.8	600	IPOP	ROCK	11:00	13:00

Case 5

Search for:

No. of sites = 4, CPU=60, Mem=60, Additional Net=None, Image=ROCK, Time begin=8:00, Time end=12:00, Duration=2 hours

Flow:

1) Check for sites that match Additional Net = None and Image = ROCK --> CU, KU, TU, UF,UCSD

2)start with 3 site resource demand CPU = 15 Mem = 15 on each site

2.1) Check for sites that has capacity for the resource demand -- CU ,KU,UCSD,UF

2.2) Create combination as results --> CU+KU+UCSD+UF (in Hour3,4)

Results:

Sites	*CPU Needed*	*Total CPU Avail./Capacity*	*Mem Needed*	*Total Mem Avail./Capacity*	*CPU Speed*	*Network Speed*	*Additional Net*	*Image Types*	*Time Begin*	*Time End*
CU(4)+KU(1)+UCSD(2)+UF(2)	15:15:15:15	84/292	15:15:15:15	168/840	2.3	600	IPOP	ROCK	10:00	12:00