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LIST OF SYMBOLS AND ABBREVIATIONS

\( w \)  Average waiting time of a job in a queue  
\( c_j \)  Capacity of resource \( j \)  
\( D_l \)  Deadline  
\( D_r \)  Dedication rate  
\( E_s \)  Economic state  
\( E \)  Efficiency  
\( E_i \)  Expected sequence  
\( e_{r_i}^n \)  Energy consumption rate for the \( n \)-th job of the \( i \)-th user  
\( F_r \)  Failure rate  
\( D_a \)  Hard disk availability  
\( H_r \)  Hit rate  
\( M_s \)  Mature job queue  
\( \lambda \)  Mean arrival rate  
\( \mu \)  Mean service rate  
\( R_m \)  Memory capacity  
\( N_e \)  New job queue  
\( k \)  Number of elements in a set  
\( U \)  Number of jobs a resource successfully completes  
\( F \)  Number of occurrences of a resource in the \( rank_list \)  
\( P \)  Number of occurrences of the resources in the three dimensional matchmaking engine  
\( N_n(E) \)  Number of times the event \( E \) occurs in \( n \) trials  
\( Q \)  number of times the resource is allocated for a job.
$R$ Number of times the resource is rejected in the three dimensional matchmaking engine

$O_l$ Observed sequence

$p_{joff}$ Off Peak time price

$U_l^j$ Optimal payment

$p_{jon}$ Peak time price

$P(E)$ Probability of occurrence of an event $E$

$R_t$ Recovery time

$R_{co}$ Resource cost

$R_c$ Resource CPU type

$R_l$ Resource location

$R_n$ Resource name

$R_o$ Resource OS

$R_r$ Resource type

$q_{in}$ Size of the $n$-th job of the $i$-th user

$S_r$ Success rate

$T$ Test statistic

$\Delta t_1$ Time interval at which the Hit rate and the Recovery time are calculated and updated in the Knowledge unit.

$\Delta t$ Time interval at which the dynamic parameters are updated in the resource pool.

ACO Ant Colony Optimization

ACS Access Control Systems

CFP Call for Proposal

DAS-3 The Distributed ASCI Supercomputer 3

DQA Dual Queue Algorithm

DQM Dual Queue Model

DQTDMM Dual Queue Three Dimensional Matchmaking Model

FCFS First Come First Serve
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<td>First In First Out</td>
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<tr>
<td>GARA</td>
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<td>MAS</td>
<td>Multi Agent System</td>
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