

# LIST OF NOTATIONS

Symbols	Definition
$d_i$	Service delay for an IoT node $i$
$p_i^I$	Probability that IoT node $i$ processes its own request
$p_i^F$	Probability that IoT node $i$ send its request to fog layer
$p_i^C$	Probability that IoT node $i$ send its request to cloud layer
$X_{st}^{LL'}$	Propagation delay from node $s$ in layer $L$ to node $t$ in layer $L'$ , where $s, t \in i, j, k$ and $L, L' \in I, F, C$
$Y_{st}^{LL'}$	Sum of all transmission delays on links between node $s$ in layer $L$ to node $t$ in layer $L'$ , where $s, t \in i, j, k$ and $L, L' \in I, F, C$
$A_i$	Average processing delay of request at IoT node $i$
$a_i$	Average processing delay of type Light requests at IoT node $i$ ( $a_i'$ is average processing delay of type Heavy request)
$L_{ij}$	Delay of processing and handling requests of IoT node $i$ in the fog layer (and possibly the cloud layer), where fog node $j$ is the fog node to which IoT node $i$ initially sends its request ( $L_{ij} = L_{ij}(0)$ )
$L_{ij}(x)$	Delay of processing and handling requests of IoT node $i$ in fog layer (and possibly cloud layer), by fog node $j$ during $x$ 'th offload in the fog layer
$S_D^L$	Set of nodes in domain $D$ at layer $L$ , where $(L, D) \in (I, P), (F, M), (C, N)$
$S^L$	$\cup_D S_D^L$ : set of nodes (in all domains at layer $L$ )
$\overline{H}_k$	Average waiting time at cloud server $k$
$\overline{\Delta}_k$	Average waiting time of a single processing unit at cloud server $k$
$\varsigma_i$	Average size of request data that IoT node $i$ generates
$b_i$	Probability that a generated request at IoT node $i$ is Light
$W_j$	Waiting time of fog node $j$
$c_j$	Number of type Light request in fog node $j$ 's queue
$P_j$	Probability that an incoming request is accepted by fog node $j$
$\theta_j$	Offloading threshold at fog node $j$
$e_M$	Maximum offload limit at the fog layer in cluster $M$
$q$	The fog fairness parameter