ACRONYMS

Thesis Acronyms

1 G	First Generation
2 G	Second Generation
3 G	Third Generation
4 G	Fourth Generation
5 G	Fifth Generation
ANN	Artificial Neural Network
BBNs	Bayesian Belief Networks
BE	Best Effort
BER	Bit Error Rate
BS	Base station
BWA	Broadband Wireless Access
CAC	Call Admission Control
CBR	Constant Bit Rate
CDMA	Code Division Multiple Access
CINR	Carrier Interference to Noise Ratio
CIR	Carrier Interference Ratio
CCI	Co-Channel Interference
CPE	Customer Premises Equipment
DCA	Dynamic Channel Allocation
DVB-S	Digital Video Broadcasting - Satellite
DVB-RCS	Digital Video Broadcasting- Return Channel through Satellite
DVB-H	digital video broadcasting-handheld
DVB/DAB	Digital Video Broadcasting/ Digital Audio Broadcasting
FTP	File Transfer Protocol
FCA	Fixed Channel Allocation
GEOSS	Global Earth Observation System of Systems
GHS-RTA	Guaranteed Handover Scheme - Rate Transition Area
GMES	Global Monitoring of Environment and Security
GPS	Global Positioning System
GPRS	Genral Packet Radio Service
GSM	Global System for Mobile
GHz	Giga Hertz

HAP	High Altitude Platforms
HAPCS	HAP Communication System
HAE UAV	Long-Endurance Unmanned Aerial Vehicle
HCA	Hybrid Channel Allocation
HTTP	Hypertext Transfer Protocol
HUTs	HAP User Terminals
INR	interference to noise ratio
ITU	International Telecommunication Union
JAXA	Japan Aerospace Exploration Agency
Km	Kilo meter
LAN	Local Area Network
LAP	Low Altitude Platform
LEO	low earth orbit
LTA	Lighter-Than-Air
LTE-A	Long Term Evolution –Advanced
MAP	Medium Altitude Platform
MOBISAT	Mobile Broadband Interactive Satellite Access Technology
Mbps	Megabits per second
MPEG	Moving Picture Experts Group
MRTR	Minimum Reserved Traffic Rate
MS	Mobile Subscribers
MSTR	Maximum Sustained Traffic Rate
M	Meter
NICT	National Institute of Information and Communications Technology
NGN	Next Generation Network
NPs	Non Priority scheme
NrtPS	Non- real time Polling Service
PCS	Personal Communications Service
PSTN	public switched telephone network
QDRA	QoS-aware Dynamic Resource Allocation
QoS	Quality of Service
RAC	Rural Area Coverage
RNC	Radio Network Control

RFC	Regenerative Fuel Cell
RAN	Raio Access Network
RRB	Radio Regulations Board
RRM	Radio Resource Management
RSS	Receive Signal Strength
RTTs	Round Trip Times
rtPS	real time Polling Service
SAC	Suburban Area Coverage
SIR	Signal Interference Ratio
SPP	sub-platform point
TDMA	Time Division Multiple Access
UAC	Urban Area Coverage
UGS	Unsolicited Grant Services
UHF	Ultra High Frequency
UMTS	Universal Mobile Telecommunications System
VBR	variable Bite Rate
VoIP	voice over Internet protocol
VSAT	Very Small Aperture Terminal
WiMAX	Worldwide interoperability Microwave Access
WRC	World Radio communication Conference
W-CDMA	Wideband - Code Division Multiple Access

SYMBOLS

The following symbols are expressed by their specific interpretations throughout this thesis. The reader should note that this nation is not exhaustive.

H	Platform height
G	Distance between the SPP and the center of the cell
r	The hexagonal cell and the coverage radius
θ_{sub}	Represents the elevation angle
$\emptyset_{sub}$	Represents the azimuth angle
D	The separation distance between cells
λ	Wave length
L_{fs}	Free space loss
PL_{hata}	Hata model used for empirical path loss
dB	Decibel
f	Frequency
h_b	Height of BS antenna in m
h_m	Height of mobile station antenna in meters
$a(h_m)$	Correlation factor in dBm
ΔA	Coverage area
Δh	Change of high
ϑ	Subtended angle
disp	Horizontal displacement
Pr	Probability of hand-off
T_{init}	Iinitial threshold point at which initial hand-off process
T_{min}	Minimum threshold point at which execution phase of hand-off start
S_{avg}	Average of received signal.
I	Traffic intensity,
T	Duration of monitoring period is average holding time
N_c	Total number of calls in monitoring period.
θ_k	Threshold $\theta_k$can be considered as one of the weight
Y_k	Output of a neuron k
W_{kj}	Weights
$F(..)$	Activate function
$\mu_{ji}(0)$	Centre value

$\delta_j(0)$	Span value
$W_K(0)$	Weight vector
e_k	Error
$W_{kj}(n+1)$	Desired pattern and update the weight
τ_w	Represent the learning rate of weight and center
τ_μ	Represent the learning rate of weight and center
τ_δ	Learning rate
λ_t	Permanent arrival intensity
$(\mu+\eta)$	Total service intensity
P_b	Probability of blocking
K	Channels are for permanent channel allocation
Ch	Channels are reserved for hand-off purpose
Tc	Total channel
$Cp1$	Comprises of channels which will be used by users who initiate new calls
$Cp2$	Comprises of channels for the user's hand-off calls
m	Remaining channels
$Cp3$	Remaining channels (m) are placed
λ_k	The new-call arrival intensity is represented
λ_l	Hand-off call arrival intensity is represented by.
λ_t	Total call intensity
λ_0	Initial intensity
p_{j2}	Probability of success that a hand-off call request is successful
p_{01}	Initial probability of a new-call arrival request and
p_{02}	Initial probability of a new hand-off call request is
p_{j1}	Probability of success of a new-call arrival request.
Pcb	Probability of call blocking
Pcd	Probability of call dropping
n_u	Represent currently accepted connection of UGS
n_r	Represent currently accepted connection of rtPS
n_n	Represent currently accepted connection of nrtPS
λ_U	The arrival intensity of new requested connection of UGS
λ_r	The arrival intensity of new requested connection of rtPS

λ_n	The arrival intensity of new requested connection of nrtPS
$1/\mu_u$,	The service time is assumed to be exponentially distributed with mean of UGS
$1/\mu_n$	The service time is assumed to be exponentially distributed with mean of rtPS
$1/\mu_r$	The service time is assumed to be exponentially distributed with mean of nrtPS
S	State space
BW_U	Bandwidth utilization
B_u	Bandwidth requirements of the UGS connections
B_r	Bandwidth requirements of the rtPS connections
B_n	Bandwidth requirements of the nrtPS connections
π_s	Steady state probability of the state s,
B	Total bandwidth available at the BS.
λ_{hu}	Arrival process of the hand-off and newly originated UGS
λ_{hr}	Arrival process of the hand-off and newly originated rtPS
λ_{hn}	Arrival process of the hand-off and newly originated nrtPS connections
λ_{ou}	Arrival process of the hand-off and newly originated UGS connections
λ_{or}	Arrival process of the hand-off and newly originated rtPS connections
λ_{on}	Arrival process of the hand-off and newly originated nrtPS connections
λ_T	Total arrival rate of the connection requests at the BS
B_r^{min}	Represented MSTR allocated rtPS connection
B_n^{max}	Represent MRTR and MRTR allocated for nrtPS
B_r^{max}	Represent MRTR and MRTR allocated for rtPS, respectively
B_n^{min}	Represent MSTR allocated for nrtPS connections
$\pi_{(n_u,n_r,n_n,B_r,B_r}$	Steady state probability of state $s = (n_u, n_r, n_n, B_r, B_n)$
Bs_i	Bucket size of connection i
f	Duration of a timeframe (ms) which includes downlink and uplink subframe
d_i	Maximum delay requirement of a connection (ms),
r_i	Average data rate of connection i
C_{rtps}	Total amount of bandwidth allocated to rtPS connections
C_{nrtPS}	Total amount of bandwidth allocated to nrtPS
A	Offered traffic load in Erlangs
N	Number of total available channels
P	Probability of blocking