

ALMA application layer protocol for client-server TCP communication (v2.0)

Communication nodes:

PS = Public Server

HS = Home Server

AC = Android Client

Information			Syntax								Comment
Function	Precondition	Direction	#	Data1	Data2	Data3	Data4	Data5	Data6	Data7	
AC ↔ PS											
AC login	AC login request	AC → PS	1	AC_name	password						PS generates new session key
Result of login attempt from AC	AC has made login attempt using password	PS → AC	2	“ok” /”no”	Exception-message / ”null”	AC_name	admin boolean 1/0	HS_alias	sessionKey Replacing old key		
AC logout	AC requests logout	AC → PS	3								PS destroys session key
AC reconnection	Logged in AC uses key to re-establish a connection	AC → PS	4	AC_name	sessionKey						
Result of AC reconnection request	AC has requested reconnection using key	PS → AC	5	“ok” /”no”	Exception-message / ”null”						
Alter a gadgets’ state  AC sends request to PS	AC makes request to alter a gadget’s state	AC → PS	8	gadgetID integer	new state integer						
PS send all gadgets’ info to AC.	HS has requested PS to update CA’s gadget	PS → AC	14	“nonnull” / “null”	gadgetID integer	name of gadget. String	type String for categorizing	state integer	“next” / “null” next = from Data2		

	list										
Exception message	Exception message	PS → AC	18	Exception message							
HS ↔ PS											
HS login	HS login request	HS → PS	6	HS_ID	password	HS_alias					
Result of HS login	HS has attempted login	PS → HS	7	“ok” /”no”	Exception-message / ”null”						
Alter a gadgets’ state  AC request forwarded from PS to the correct HS	AC has made request to alter a gadget’s state	PS → HS	9	connID Of the Android client that triggered the request	gadgetID integer	new state integer					PS appends the AC that triggered the request
Request all gadgets’ info	AC has just logged in	PS → HS	11	connID Of the AC that just logged in							
Send all gadgets’ info to PS.  To update individual AC	AC just logged in.	HS → PS	12	connID Of the AC to be updated	“nonnull” / “null”	gadgetID integer	name of gadget. String	type String for categorizing	state integer	“next” / “null” next = from Data3	
Send all gadgets’ info to PS.  To update all ACs belonging to a HS	Gadget info updated.	HS → PS	13	“nonnull” / “null”	gadgetID integer	name of gadget. String	type String for categorizing	state integer	“next” / “null” next = from Data2		
HS logout	HS terminating	HS → PS	21								PS terminates HS’s client thread
HS ↔ Native ALMA Gadget											
Alter a	AC has made	HS →	10	new state	request_spec						request_spec:

gadgets' state HS requests gadget to alter state	request to alter a gadget's state	Gadget		integer. Requested state.	/ null String. Optional						Request specific data from a gadget.
Poll gadget state	HS polls gadget at intervals.	HS → Gadget	15	request_spec / null String. Optional							Used to verify gadget connectivity and potential manual state changes.
Gadget sends its current state to HS	Gadget poll, or gadget state change.	Gadget → HS	16	state integer. Current state							Verifies a gadget state update. Also used as response to poll (15)
Other commands											
Exception message	Exception message from HS	HS → AC	19	Exception message	connID Of the Android client to receive the Exception						
Connection fail	AC lost connection with PS	AC → AC Thread communication	20								
HS status	HS is either connected or disconnected	AC → AC	22	“ok” /”no”							Informs AC of the connectivity to its HS

Commands are separated by colon

### Example

Alter a gadget's state (AC → PS) example: “ 8:5:1”

Above: Client requests gadget with id 5 to turn to state 1.

### Notes

- Naming users/gadgets should not allow colon (“:”).
- PS already knows the HS\_ID of each active AC's, from which it receives requests, so sending HS\_ID to server is redundant.